

Basic Concepts of Project Management

Module I: Introduction to Project Management

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Welcome to Basic Concepts of Project Management

- Course material will be in english
- Local emergency exit procedures
- Celular phones
- Lotus Notes
- Examination last day
- Attendance expectations (85%)

Start on time



Information Flow



Instructors



Students

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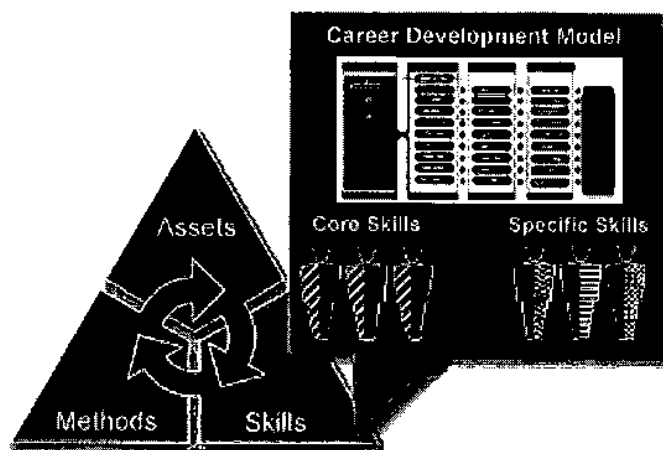
Basic Concepts of Project Management

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Career Development Model

The Career Development Model is the fundamental structure of the Professional Development Program. This model identifies core skills essential to all practitioners, profession skills unique to each profession and functional skills that address the specific technical requirements to deliver our solutions.



The IBM Project Management Community

In support of our market-driven strategy, IBM will manage its business as a project_based business. Projects are the means by which we will create solutions to satisfy specific client needs. The corporation will fully apply and integrate project management into all core business processes and system.

- Accepted by IBM Corporate Executive
Committee on November 19, 1996

Project management is a critical professional discipline.

Project Management - A Core Competence in IBM

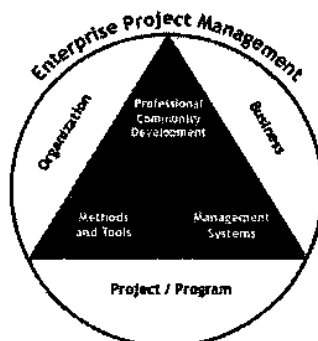
Organizational competence means that :

- Work is organized along project lines (that is, by product or division)
- Projects are consistently funded, staffed, and managed in all business units, and project management has a consistent role in overall business processes
- Individuals involved in projects understand their roles in individual and multiple projects in terms of :
 - Planning
 - Executing
 - Evaluating
- Project outcomes can be predicted with high degrees of certainty; when predictions are incorrect, IBM has the knowledge and ability to adjust decisions and take proper corrective action early

Project Management Center of Excellence

Via the web: <http://w3.ibm.com/transform/project/index.html>

- The PM/COE mission is to drive corporate programs to transform IBM to a project-based enterprise working with deployment teams in IBM Global Services (WWPMI) and Brands. Enterprise Project Management (EPM) - underlies the integration of project management into the fabric of IBM making project management systemic across the enterprise.



Agenda

As part of the course presentation the agenda will be distributed to the participants.

We will see it now....

Student Presentations

- Name
- Location
- Years in current organization
- Discipline experience and team member experience

In Groups

- Objectives/expectations for the course



Objectives

- At the end of this course, you should be able to:
 - ▶ Use project management skills
 - ▶ Build your project team
 - ▶ Prepare a useful team charter
 - ▶ Identify and validate your project requirements
 - ▶ Manage transformation of requirements into specifications
 - ▶ Use change management to control requirements
 - ▶ Prepare a Work Breakdown Structure (WBS)
 - ▶ Prepare a risk management plan
 - ▶ Establish a project estimate
 - ▶ Compile and manage reliable network schedules
 - ▶ Develop and manage project baselines
 - ▶ Use project management skills and processes to control project execution
 - ▶ Prepare and execute a project closeout strategy

Objectives

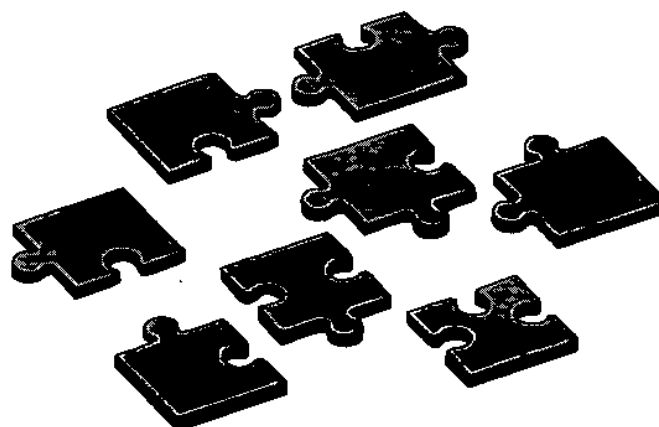
- and you should be able to:
 - ▶ Apply Leadership concepts and techniques
 - ▶ Use PM oriented Metrics
 - ▶ Operate at a proper CMM level
 - ▶ Identify and apply all needed Business Controls
 - ▶ Use GS Method, Knowledge Management, Intellectual Capital Management, GS Risk, XSER, PCB, PM Office and CLAIM.
 - ▶ Understand and use the proper Procurement Administrative Circuits

Basic Concepts of Project Management

Module I Team Exercise: Building a bridge

Module I - Team Exercise Building a bridge

- A Project Manager will be designated for the team for this particular exercise (PM role will be rotative within a group for different exercises).



Basic Concepts of Project Management

Module II: Kicking Off the Project

Objectives

At the end of this module, you should be able to:

- Identify the characteristics of a project and project management
- Describe the phases of a project
- Recognize the roles and responsibilities of a project manager
- Describe the matrix organization
- Outline the importance of a successful project team
- Review a project charter
- Prepare a team charter
- Describe the influence of project politics in the project management environment

Basic Definitions

What is a program?

- A group of interrelated projects managed together

What is a project?

- A finite endeavor that:
 - Has a definite beginning and a definite end
 - Is unique
 - Consumes resources

What is a subproject?

- Part of a project managed with a level of independence

Basic Definitions (continued)

What is project management?

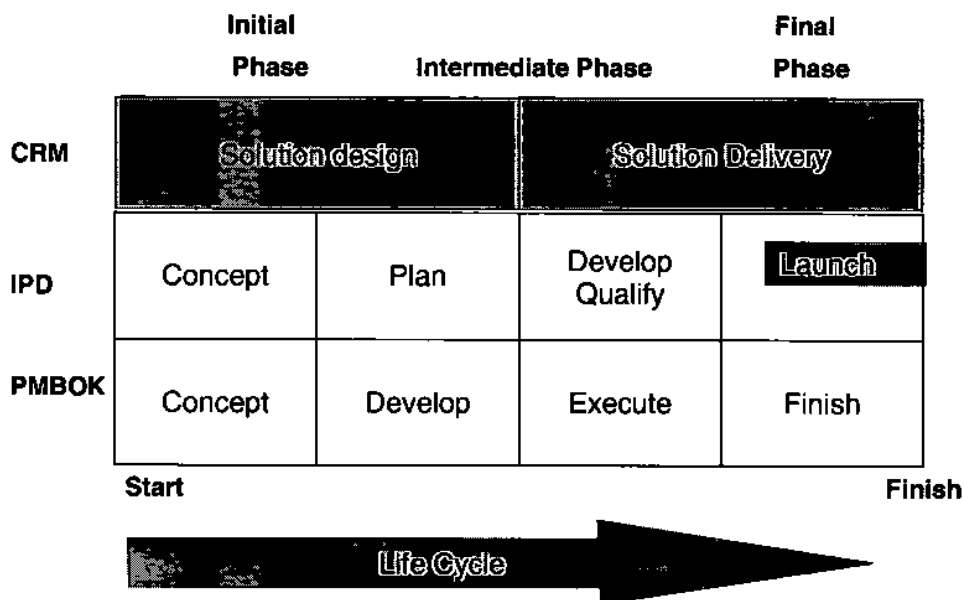
- Applying knowledge, skills, and tools to project activities, subprojects, and programs to meet or exceed stakeholder needs and expectations

Project management involves managing:

- Communication
- Coordination
- Team Building
- Issues Resolution
- Integration
- Execution
- Planning
- Budgeting
- Control
- Customer Expectations

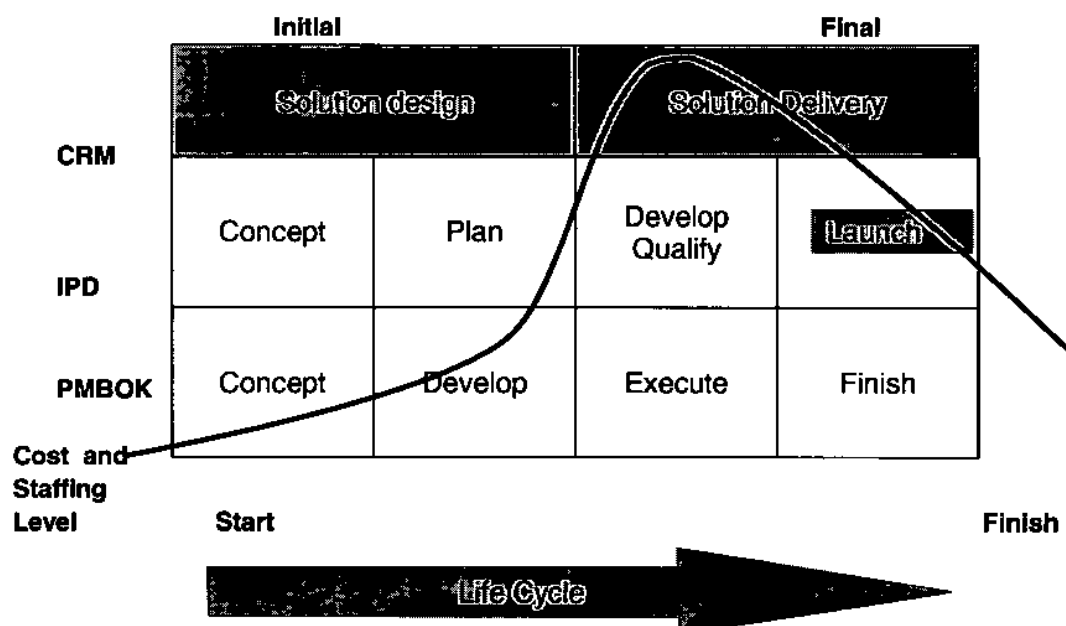
Phases of a Project

- Projects are usually divided into phases
- Collectively, the phases are called the project life cycle
- Project life cycles are similar but rarely identical



Resource Use Across Phases of a Project

The curve represents the change in level of effort required in a typical life cycle



Projects = Small Businesses

Both projects and small businesses:

- Consume resources
 - Staff
 - Equipment
 - Facilities
- Have stakeholders who:
 - Allocate equity capital (assets - liabilities)
 - Define objectives
 - Demand returns on capital
- Have critical success factors
 - Cost
 - Schedule
 - Quality
- Have financial targets to:
 - Work within a budget
 - Control costs
 - Generate revenues and profit
 - Ensure a positive cash flow

The Project Manager and Project Stakeholders

The project manager is:

- Accountable for the project
- The single point of contact for the project
- Responsible for identifying potential stakeholders

Project stakeholders are:

- Those people who have an interest or role in the project



Stakeholder Analysis

- Identify all stakeholders (any individual or entity that has something at stake (gain or loss) with the success of your project)
- Determine is friend or foe
- Utilize friends to bring foes on line
- Develop and implement a win/win strategy to bring foes on line

Remember:

- There is always something with which you can "hook" your foes into the success of your project
- You don't have to "like" someone to invest them in the success of your project
- Keep your own ego where it needs to be to ensure your project's success

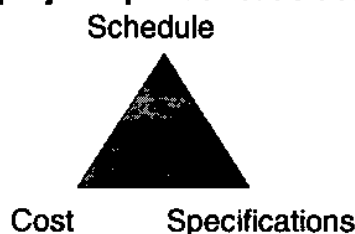
Roles of a Project Manager

Plan the project's:

- Technical activities
- Project management activities

Manage the triple constraints to client/project sponsor satisfaction:

- Schedule
- Cost
- Specifications



Organize the project, which includes:

- Forming the project team
- Setting up systems to document the project
- Setting up project plans and processes by which the project will be controlled

Roles of a Project Manager (continued)

You will manage (or direct) the project by:

- Tracking the technical performance aspects of the project schedule and cost
- Tracking the financial performance of the project
- Assessing and managing the project's risk factors
- Dealing with issues and problems that occur during the project
- Tracking suppliers' performance against their contracts
- Ensuring client/project sponsor satisfaction
- Building and maintaining the morale of the project team
- Communicating with all stakeholders
- Managing the entire team, including contractors
- Tracking team member performance
- Using a change control process to control scope
- Closing the project

Follow defined processes that enable you to plan, organize, and manage the project

Key Competencies of a Successful Project Manager

- **Long-range perspective:** An individual's tendency to consider long-term implications and possibilities when acting or making decisions
- **Risk-taking/venturesomeness:** An individual's tendency to try new ideas and take action in the face of potential risks
- **Clarification of goals:** An individual's ability to define and clarify project and individual goals
- **Innovation/creativity:** An individual's ability to apply imaginative thinking and generate original ideas and thoughts regarding business issues
- **Participative problem solving:** The extent to which an individual solicits and applies the ideas and knowledge of others in solving problems
- **Systematic thinking and planning:** An individual's ability to apply a systematic approach to thinking through issues and planning team and individual activities
- **Strategic inquiry:** An individual's tendency to sort through and handle complex or conflicting information and to prioritize issues and alternatives
- **Political awareness:** An individual's ability to develop and maintain a sensitivity to personal and organizational relationships and to their ramifications for a project

Key Competencies of a Successful Project Manager (cont.)

- **Team member facilitation:** An individual's demonstrated ability to coach and develop project team members
- **Team development:** An individual's ability to develop teamwork and improve the coordinated functioning of project team members
- **Assertiveness:** An individual's tendency to assert himself or herself and hold to a direction he or she sets
- **Feedback to team members:** An individual's demonstrated ability to provide timely, appropriate, and accurate feedback to team members
- **Relations with functional managers:** An assessment of the individual's ability to establish and maintain positive, constructive relationships with functional managers
- **Standards of performance:** The extent to which the individual clearly sets, maintains, and pursues high standards of performance
- **Drive:** The level of urgency expressed by the individual in pursuing work efforts
- **Goal pressure:** The extent to which an individual exerts pressure toward achieving goals; note that excessive goal pressure can also be a negative trait

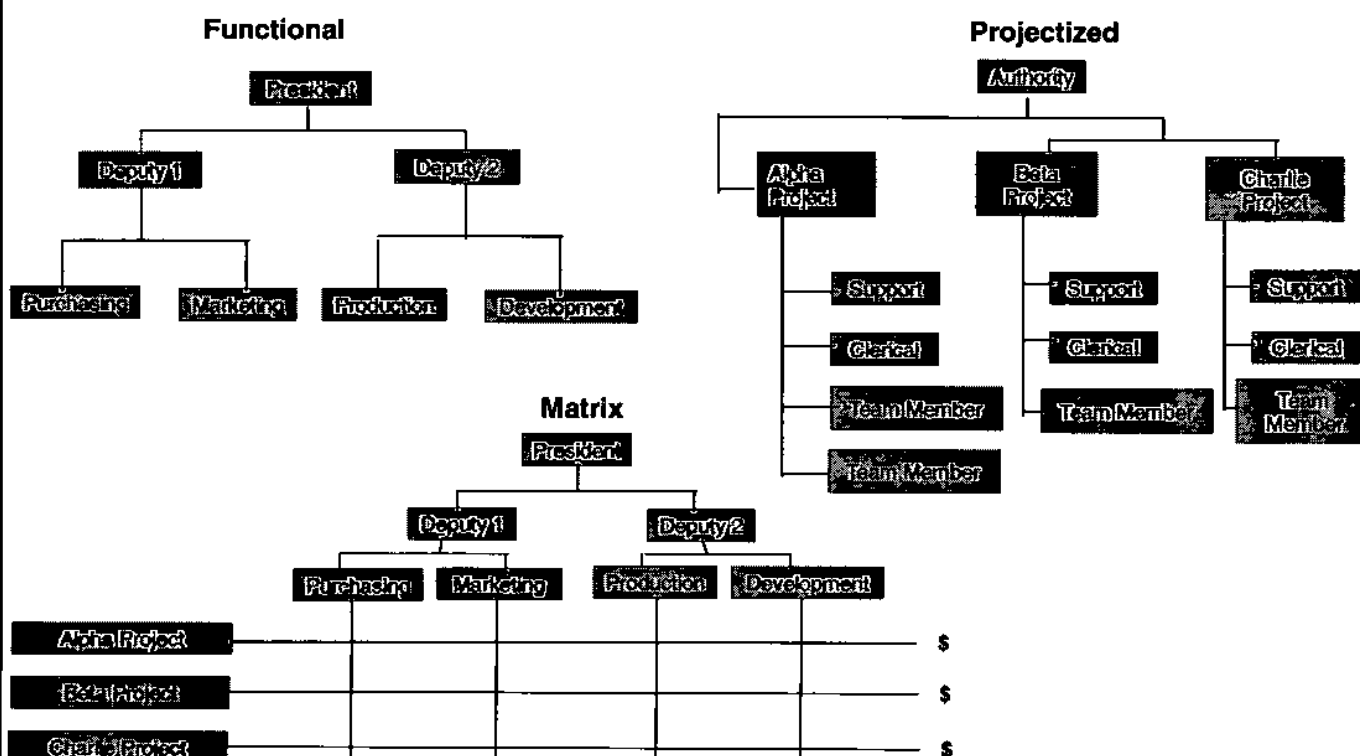
Key Competencies of a Successful Project Manager (cont.)

- **Delegation (permissiveness):** An individual's ability to assign work appropriately to subordinates or team members, within the context of providing a consistent amount of task direction and guidance; note that too much delegation without an appropriate amount of structure can be negative (permissiveness)
- **Recognizing performance:** An individual's demonstrated tendency to recognize the performance of team members in an appropriate manner

Behaviors of a Successful Project Manager

- Is proactive
- Tries new ideas
- Perseveres
- Is goal oriented
- Communicates
- Motivates
- Is organized
- Prioritizes
- Is sensitive to people and situations
- Facilitates
- Coaches
- Is innovative
- Is honest
- Is realistic
- Provides critiques when required
- Listens
- Plans
- Thinks systematically
- Is assertive
- Is decisive
- Is self-confident
- Is a team builder
- Pursues excellence
- Is enthusiastic
- Is energetic
- Delegates
- Is supportive
- Maintains contact
- Is sensitive to wants and needs
- Offers praise when appropriate

Types of Organizations Used in Projects



How Organizational Structure Influences Projects

Organization Type Project Characteristics	Functional	Matrix			Projectized
		Weak	Balanced	Strong	
Project Manager's Authority	Little or none	Limited	Low to moderate	Moderate to high	High to almost total
Percent of performing organization's personnel assigned full time to project work	Virtually none	0-25%	15-60%	50-95%	85-100%
Project Manager's role	Part-time	Part-time	Full-time	Full-time	Full-time
Common titles for project manager's role	Project coordinator / project leader	Project coordinator / project leader	Project manager / project officer	Project manager / program manager	Project manager / program manager
Project Management administrative staff	Part-time	Part-time	Part-time	Full-time	Full-time

From PMI Standards Committee 1996, 18

Projects in a Matrix Organization

- Matrix organizations evolved from the traditional management structure
- Its multidisciplinary team members are drawn from various line or functional units in a hierarchical organization
- Using a matrix, a project organization is superimposed on a functional organization
- Matrix organizations are complex and present a challenge to the project manager
- Challenges involve:
 - Authority/responsibility of the project manager and functional manager
 - Communication flows (within the team and to and from other groups)

Managing in the Matrix

- Successful operation depends on the attitudes, actions, and activities of the people involved
- A project charter, assigning responsibility and authority to the project manager, is extremely helpful
- Project managers and functional managers must develop good working relationships
- IBM project managers must realize that they accomplish their jobs primarily through the process of negotiation and leadership
- IBM project team members must adapt to a two-boss situation

Project Organization: Survival Techniques

- Have a project charter
- Learn how to anticipate and constructively channel conflict
- Establish a clear scope of project with team members
- Develop methods to promote teamwork
- Document approval of objectives, plans, and budgets
- Reduce uncertainty and risk through careful and continual planning
- Plan globally, think locally
- Develop political awareness
 - Know the key players
 - Know their goals
 - Know your strengths and weaknesses
 - Know the influences

Project Charter

A project charter is a document that formally recognizes the existence of a project. It should include:

- The business need that the project was undertaken to address
- A product description that documents the general characteristics of the product or service and draws a relationship between the service and business needs

A project charter should be issued by a manager external to the project team and at a level appropriate to the needs of the project. It provides the project manager with the responsibility and the authority to apply organizational resources to project activities

Project Charter Fundamentals

- Establish the scope
- Be as concise as possible
- Names project manager as the responsible and authorized party
- Identify deliverables, schedule, budget

Team Building Basics

A team:

- Is a number of individuals associated in some joint action
- Includes people in your organization, suppliers, and clients/project sponsors
- Combines appropriate individual talents with a positive team spirit to achieve results

Team development:

- Enhances the ability of stakeholders to contribute as individuals
- Enhances the ability of the team to function as a team

When a group of individuals become a team, those individuals:

- Become committed to achieving common objectives
- Learn to work well together and enjoy it
- Produce high-quality results

How Do You Build a Team?

- Select the right team members
 - Identify the project skills needed
 - Validate required skills and resources
- Organize the team
 - Identify all subproject managers
 - Prepare organization chart
 - Establish delegation levels
- Ensure open communication
 - Establish communication plan
- Inspire team members to do their best
- Incorporate new team members as they join the project during its life cycle

Considerations For a Multicultural Team

- Social customs
- Time zone differences
- English as a second language
- Protocol practices & communication patterns
- Documentation practices

Team Charter

- Sets broad performance objectives
- Joining the team implies its acceptance
- Sets expectations for the success of the project
- Sets the roles and responsibilities for the project team members
- Sets the ground rules for the operation of the project team, including:
 - Administration guidelines
 - Conflict management
 - Escalation
- Communication
- Status reporting
- Feedback from higher level meetings

Components of a Useful Team Charter

Team performance objectives

- Mutually agreed on
- Signature of team member

Expectations of team members

- Behaviors
- Timeliness
- Respect
- Commitment
- Openness

Rules of engagement

- Meeting protocols
- Decision making
- Discussion protocols
- Support of agreements

Components of a Useful Team Charter (continued)

Administrative procedures

- Communication management
- Document control
- Point of contact
- Escalation procedure
- Work hours (including overtime)

Key Messages for Module 2

- The project manager is the focal point - the person responsible for the success of the project ; he or she may or may not be involved at the start of the project
- The project manager must:
 - Learn to maximize the benefits of any organizational structure used
 - Motivate a team to enhance its ability to function
 - Develop a political awareness-within IBM and with clients/project sponsors, suppliers, and other stakeholders
- A project charter gives the project manager the responsibility and the authority to apply organizational resources to project activities
- A team charter sets both broad performance objectives for the team and expectations for the project; performance objectives should be measurable

Basic Concepts of Project Management

Module II Team Exercise: Team Charter

Module II - Team Exercise Team Member Roles and Responsibilities

- Each team member is to select one of the roles of designer, developer, integration specialist, training coordinator or deployment coordinator
- The project manager role will rotate around the team so each team member experiences the role of PM during a part of the study
- If you feel that there are roles and responsibilities that the case study does not supply, then identify them as part of the exercise

Module II - Team Exercise

Creating an organized Team

- You have just joined the Gymnastics Results Management System (RMS) team. Your group is meeting to kick off the project.
- As a group, you have been asked to prepare organizational ground rules and develop the team administrative requirements and administrative responsibilities, and define the procedural guidelines that will govern the behavior of the team.

Module II - Team Exercise

Organizational Ground Rules - more suggested topics

- Time limit for discussion
- Decision-making process
- How to handle conflicts
- How long team works; into lunch, after hours
- How team deals with internal issues; for example, dominant or quiet team members
- Assign PM and backup for each module
- Assign roles and responsibilities
- Develop a team name
- Remember that you will work with foreigners



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Module III: Identifying and Validating Requirements

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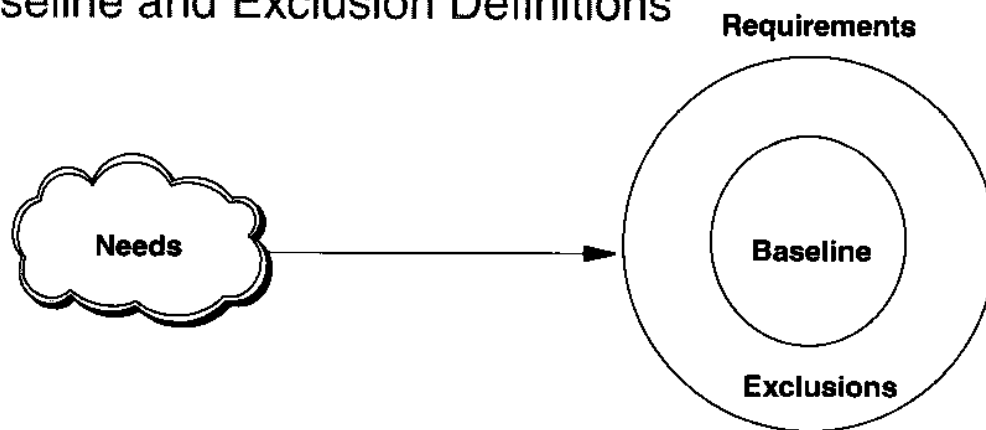


Objectives

At the end of this module, you should be able to:

- Recognize the need to identify and validate requirements
- Recognize pitfalls in defining requirements
- Recognize the client/project sponsor's role in identifying requirements
- Describe how to prepare a baseline
- Prepare a project definition report (PDR) or scope definition document for effective project planning

Baseline and Exclusion Definitions



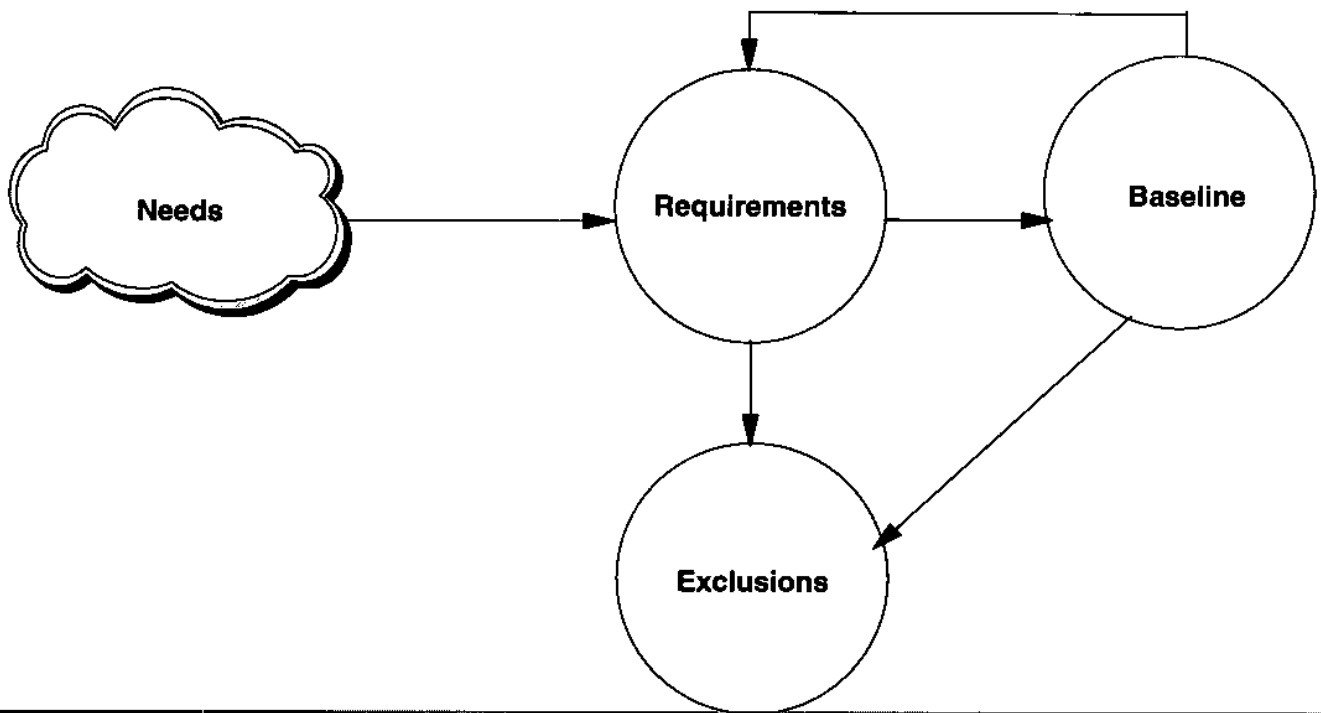
- **Needs:** Client/project sponsor requests, ideas, and business requirements
- **Requirements:** Statements of desire for a future system
- **Exclusions:** Statements of "not-included" for a future system
- **Baseline:** Statements of commitment for future system

Why Establish a Baseline ?

The Baseline:

- Incorporates the original requirements for a project plus or minus approved changes
- Serves as the basis for managing requirements
- Must be signed and approved
- Helps serve as the basis of ensuring that the project is complete
- Defines the scope of the project

Baseline = Requirements - Exclusion



Fundamental Questions in Identifying Requirements

IPD and CRM issues

- What should it do?
- Who are the stakeholders?
- How much will it cost?
- What is the expense plan?
- How long is the development process?
- How will it be serviced/maintained and what are the warranty implications?
- Can the existing infrastructure support it?
- What outside support is required?
- How will success be defined?
- What support system will keep it in place?

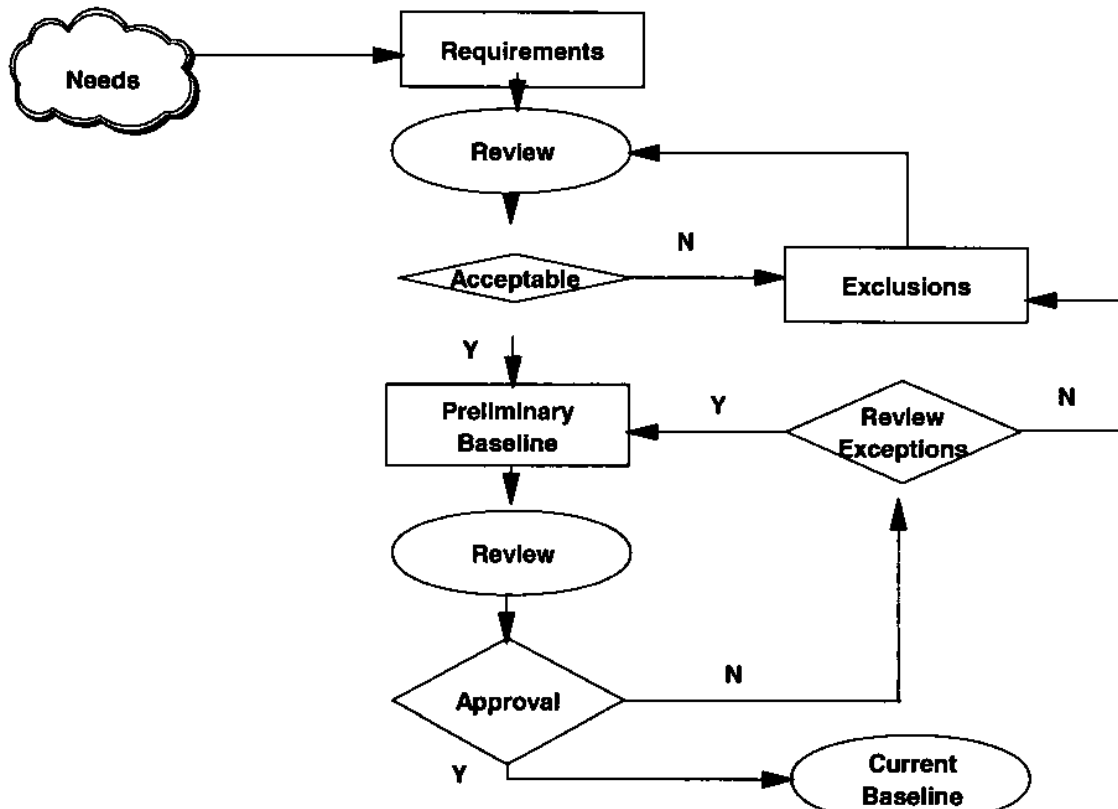
IPD issues

- How will it be marketed?
- What is the channel strategy?
- How will it be ordered?
- How long will it last?
- Are similar products already in development or operation?

Guidelines for Identifying and Validating Requirements

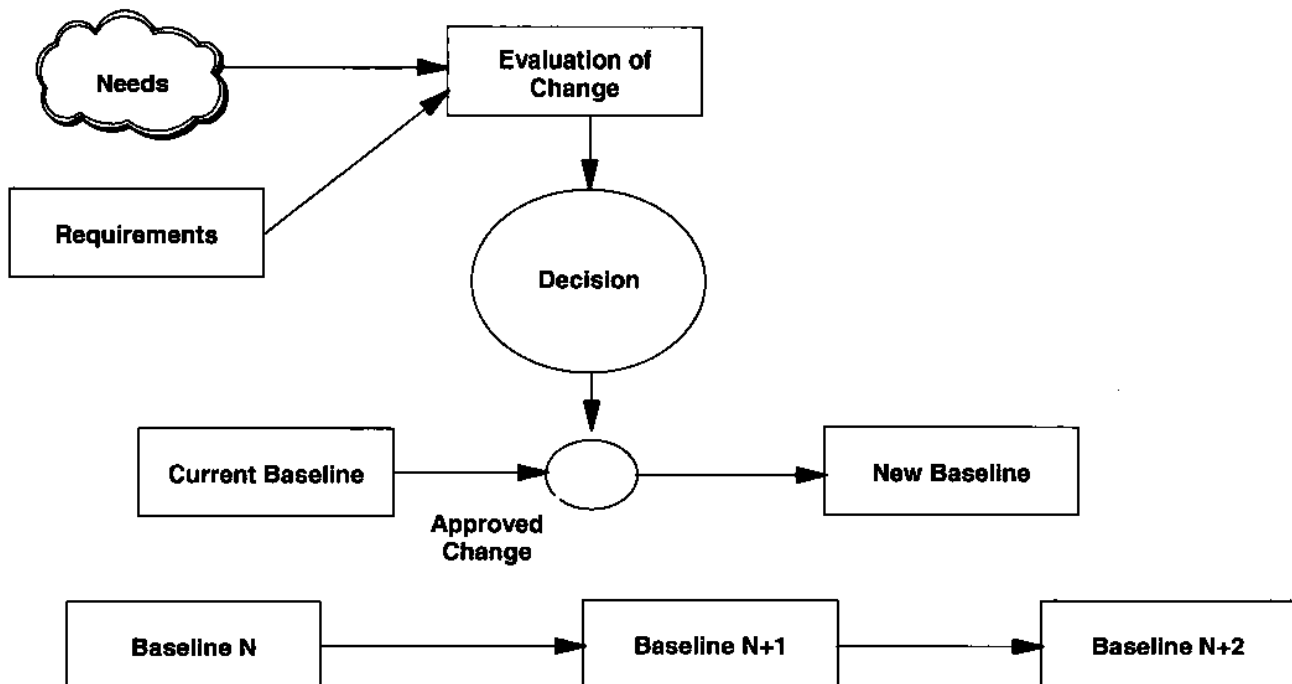
- Work jointly with clients/project sponsors
- Obtain detailed descriptions of problems
- State the requirements explicitly and have project staff and clients/project sponsors sign off
- Be realistic; assume that if a requirement can be misinterpreted, it will be misinterpreted
- Use a project definition report
- If possible, include pictures, graphics, models, and other nonverbal exhibits in requirements formulation
- Ensure that project deliverables are directly related to requirements
- Establish a system to monitor changes made to the requirements
- Educate project staff and clients/project sponsors about problems in specifying requirements
- Obtain client/project sponsor signature on requirements baseline

How to Establish a Baseline



Establishing a Baseline (continued)

Change management helps update the current baseline



Using the Project Definition Report to Identify and validate Project Requirements

- Creates a baseline for measuring and managing change
- Sets measurement criteria, helps control the project
- Prevents team from jumping in and wasting effort
- Ensures clarity of scope before detail planning begins

What Is the Project Definition Report

- Is an overview document
- Sets project bounds
- Establishes what project will and will not do
- Begins to organize project into manageable form
- Is not a project charter
- Is not a team charter
- Is not a customer contract

Note: The project definition report is also known as the scope definition document

Components of a Project Definition Report

- Background and summary of project
 - Where did this project come from?
 - Why is it being done?
 - What does the customer receive or not receive by project end?
- Project objective(s)
 - What is the target of the project?
 - What problem should the project solve?
 - What are the major components of work on the project?
- Project deliverables
 - What are the major products required to meet the objectives?
 - Customer deliverables
 - Project deliverables
 - Process deliverables

Components of a Project Definition Report (continued)

- Key milestones
 - What major points in time are important to communicate?
 - What major points in time are important to measure against?
 - What are the bureaucratic milestones?
- Assumptions
 - What unknowns are being made into knowns?
 - What are the operating rules and standards?
- Risks
 - What obstacles could jeopardize project success?
 - Cost
 - Schedule
 - Requirements
 - Quality
 - Customer satisfaction

Components of a Project Definition Report (continued)

- Key resource requirements
 - What specialized resources are necessary to complete this project?
 - Staff
 - Material
 - Facilities
- Constraints
 - What issues are restricting this project?
 - Technology
 - Staff
 - Political
- Interrelated projects
 - What effects are there on other programs?
 - What other projects are addressing related issues?
 - What other projects have a potential impact on this project?

Components of a Project Definition Report (continued)

- Acceptance criteria
 - What technical performance is required?
 - What checkpoints are in place to ensure that the right product is being delivered in the right way?
 - How will success be measured?
- Signatures
 - What reviews will be done?
 - Who approves project reviews?
- Reviews
 - At what points will management reviews be conducted? For what purpose?
 - At what points will customer reviews be conducted? For what purpose?
 - At what points will informal (team, peer) reviews be conducted? For what purpose?

Components of a Project Definition Report (continued)

- Communication plan
 - How will team members communicate?
 - How will the team communicate with the customer, stakeholders, and IBM management?
 - What types of meetings will be held? Frequency? Purpose?
 - What types of reports will be written? Frequency? Purpose?
- Change management plan
 - What process will be followed when project change occurs?
- Financial Analysis
 - How will the project manager control budget and cost?
- References
 - Documents with title, date, and version that affect the scope definition

Pitfalls in Defining Baselines

- Dealing with inherently unclear requirements
 - Dynamic nature of requirements
 - Uncertainty regarding who will use the product (important for CRM, critical for IPD)
- Identifying solutions prematurely
- Addressing the requirements of multiple clients/project sponsors
- Developers' values may color and distort requirements
- Selective filtering of requirements

From Frame 1996

Key Messages for Module 3

- Always do requirements identification, analysis, and validation
- Ensure that you ask the right questions to understand where your project fits in management's business strategy
- Use a systematic approach
- State requirements explicitly - have project staff and the client/project sponsor sign off
- Consider requirements definition between the project team and client/project sponsor
- Know the differences among requirements, exclusions, and baselines
- Issues will occur that require management and resolution and may result in change
- Baselines are essential to controlling the evolution of requirements
- As the project manager, assume responsibility for screening change requests, avoiding scope creep, and revising the baseline

Basic Concepts of Project Management

Module III Team Exercise: Requirements Baseline

Module III - Team Exercise Creating the Requirements Baseline

- Read the case study
- As a group and **in your chosen role**:
 - Identify the requirements
 - Identify the exclusions
 - Determine the baseline
- Document assumptions

Module III - Team Exercise

Deliverables by Group Assignment

- Group 1 - 1, 8 & 9
- Group 2 - 2, 3, & 4
- Group 3 - 5, 6 & 7
- Group 4 - 10, 11 & 12



Basic Concepts of Project Management

Module IV: Organizing the Work (Work Breakdown Structure)

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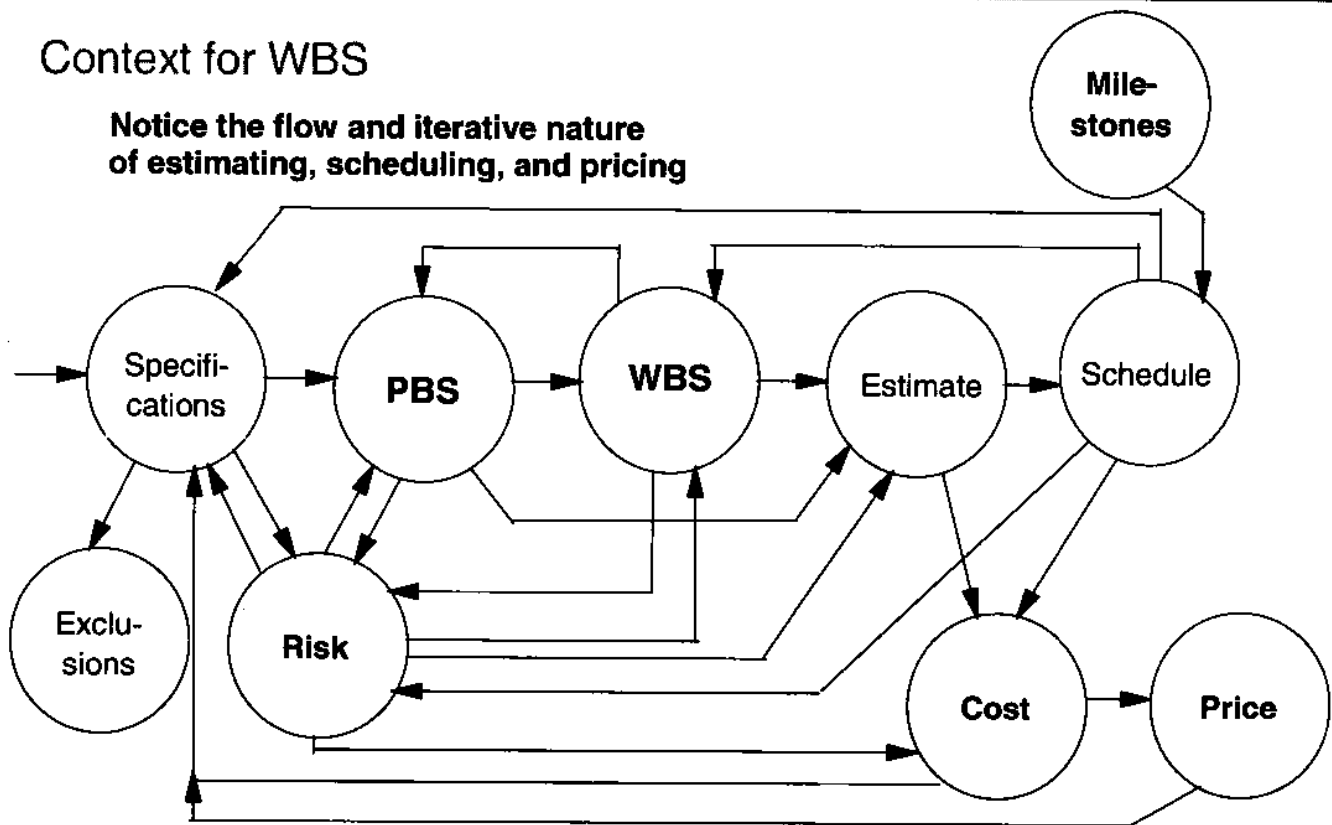
Objectives

At the end of this module, you should be able to:

- Describe the use of a work breakdown structure (WBS) in project planning
- Explain the value of a WBS
- Develop a WBS
- Use a WBS to structure the work to build deliverables

Context for WBS

Notice the flow and iterative nature of estimating, scheduling, and pricing



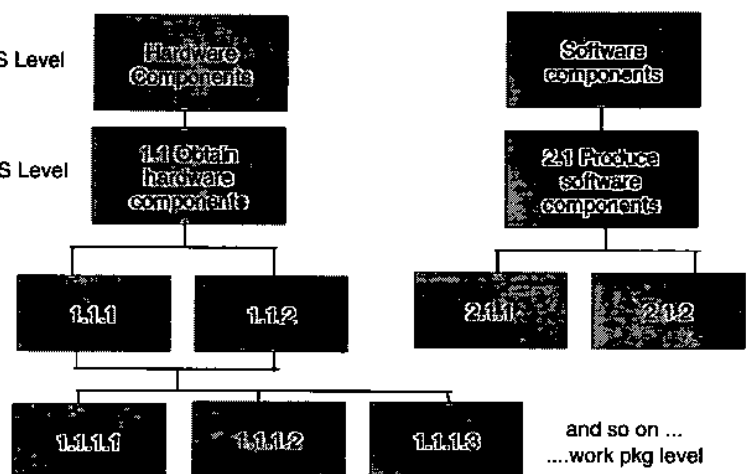
WBS Definition

WBS An Activity - oriented structure of the work to be done. Systematically presents all the work on the project that affects cost, schedule, or specifications.

- XYZ Product Development Project
- Deliverable 1 : Hardware Components
- 1.1 Procedure hardware components
- 1.1.1 From HDW Development Team
- 1.1.1.1 Identify members
- 1.1.1.2 Schedule kickoff meeting
- 1.1.1.3 Conduct meeting
- 1.1.2 Develop Initial HDW dev. plan
- Deliverable 2: Software components
- 2.1 Produce software components
- 2.1.1 From SFW Development Team
- 2.1.1.1 Identify members
- 2.1.1.2 Schedule kickoff meeting
- 2.1.1.3 Conduct meeting
- 2.1.2 Develop Initial SFW dev. plan

PBS Level

WBS Level



and so on ...
....work pkg level

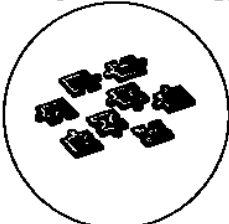
The size and number of WBS levels vary in each project, but the WBS must be completed to relate all elements to one another and to the total project

Why Is a WBS Needed

- Is the dominant prerequisite for successfully integrating and controlling the total project by assisting in:
 - Developing the risk management plan
 - Completing the schedule
 - Developing the cost estimate
- Focuses attention on project objectives
- Provides a framework to identify development projects separately from geographies, accounting systems, funding sources, and so on
- Clarifies responsibilities
- Encourages detailed planning and documentation
- Identifies specific work packages for estimating and assigning work
- Helps build the project team

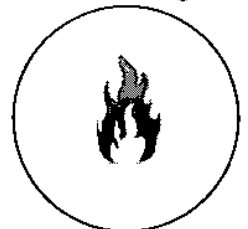
Uses of a WBS

Integration Strategy



Supplier
Management
Plan
(Make/buy
decisions)

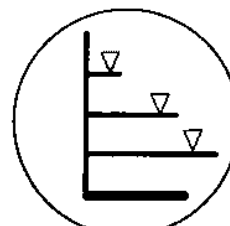
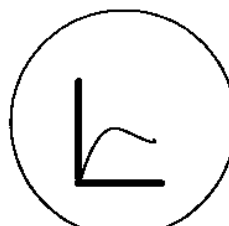
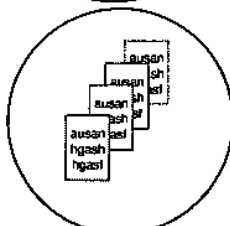
Risk Planning



System Solution
(architecture,
products, support)

WBS

Plans,
Reviews,
Documentation



Status Reporting

Cost Estimation Development

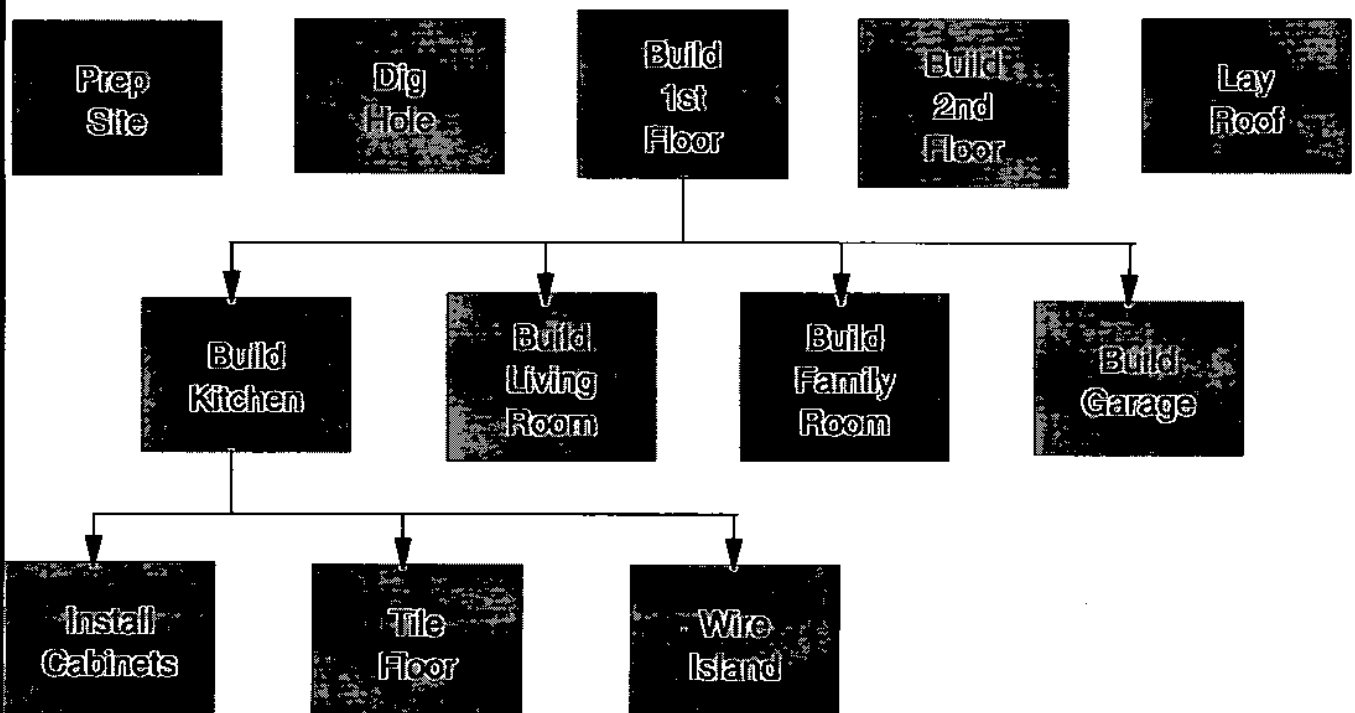
Project Schedule

Change Mgmt

Characteristics of WBS Work Packages

- Each work package results in a deliverable
 - External - given to client/project sponsor
 - Internal - used by the project (sometimes called a work product)
- Deliver a distinct, identifiable product or result
- Have definitive, verifiable completion criteria
- Can be clearly assigned as the sole responsibility of a single organizational unit or individual
- Show what work will be done

WBS Example



Guidelines for Developing a WBS

1. Gather all project-related materials
Scope definition
Technical proposals, supplier/subcontractor proposals, and so on
2. Review WBSs used for similar project
3. Prepare a summary high-level WBS; create it down to the level of manageable and trackable work package
4. Develop the WBS to the lowest possible level of control
5. Involve responsible project team members in developing the WBS
6. Include project support tasks such as project management and quality assurance
7. Avoid developing detail before it is needed
8. Review the WBS with responsible project stakeholders (internal and external); get buy-in from those responsible for each work product/element
9. Add appropriate work packages to manage risks
10. Prepare a WBS dictionary

Contents of a WBS Dictionary

- Work package number
- Work package title
- Description of work
- Work to be accomplished
- Deliverable/objective
 - How do you know you are finished?
 - Who needs the output?
- Ownership/participation
 - Who is responsible?
 - Who else will be involved?
- Acceptance criteria

Questions to Consider in WBS Development

- How will it be maintained?
 - Normal revisions
 - Change management
- How will it be stored and distributed?
- Will a project planning tool be used and, if so, how will that affect WBS creation and maintenance?
- How will you handle level of effort work?
- Are the project management elements complete?
- Can responsibility be assigned to an individual or organizational unit?
- Is there buy-in from the individuals or organizations who will be responsible for the work element?
- Is the unit of work verifiable? - can acceptance criteria be defined?
- Can progress be monitored?

Key Points on a WBS

- Identify all tasks to accomplish the project
- Use good judgment as the key to an effective WBS - no hard and fast rules
- Structure the WBS as information will be used
- Use levels of detail that allow for realistic estimating
- Use levels of detail that allow assignment to a single organizational control unit

Key Points on a WBS (continued)

- Limit level of detail to level of control
- Each lowest level task should result in a deliverable
- Each WBS description should include an action verb, for example:
 - Establish manufacturability criteria
 - Prepare final product proposal package
 - Update common software
- Each task should have a single, identifiable owner assigned after the WBS is done

Key Messages for Module 4

- WBS definition: An activity-oriented structure of the work to be done.
- Systematically presents all the work on the project affecting cost, schedule, or specifications.
- Deliverables can be internal or external
- The WBS serves as the framework on which the project is built and as the "map" for executing the project
- The WBS focuses attention on project objectives, encourages detailed planning and documentation, clarifies responsibilities, and identifies specific work packages for estimating and assigning work
- The WBS is used throughout the project; if the project plan is to be revised, the WBS must be revised as well
- Prepare a WBS dictionary to provide detailed background on each work element in the WBS
- Remember: The WBS is the cornerstone of quality project planning; it is a tool, not an end unto itself!

WBS Definition

IBM

Activity

Verbs

Identifies work
required to create
a deliverable

PMI

Deliverable

Nouns

Identifies the output
of the work
(deliverable)

Basic Concepts of Project Management

Module IV Team Exercise: Creating Hierarchical Decomposition Structures

Module IV - Team Exercise Creating Hierarchical Decomposition Structures

- Read the case study
- Review any previous documents to identify all major product deliverables for your project
- Using this information, create a WBS for **only your 2 or 3 subproject** deliverables
- After this is created, review the WBS as a team to ensure its completeness

Be thorough, but do not go below three levels of module-level detail. Remember to approach this from the perspective of the role you're playing. Be prepared to present the WBS to the class.

Module IV - Team Exercise

Creating Hierarchical Decomposition Structures

- Use easel pages to draw and show the decomposition diagram
- Write the WBS number and WBS name in every box
- Use "noun" and "verb" test to help with proper context
- Draw lines
- PM presents the team process and high-level structure

Basic Concepts of Project Management

Module V: Developing a Risk Management Plan

Objectives

At the end of this module, you should be able to:

- Define risk management
- Discuss the reasons for risk management in project management
- Describe the risk management process
 - Use risk identification methods
 - Use risk evaluation methods
 - Use risk mitigation methods
 - Use risk monitoring methods

What is Risk?

Risk has three components:

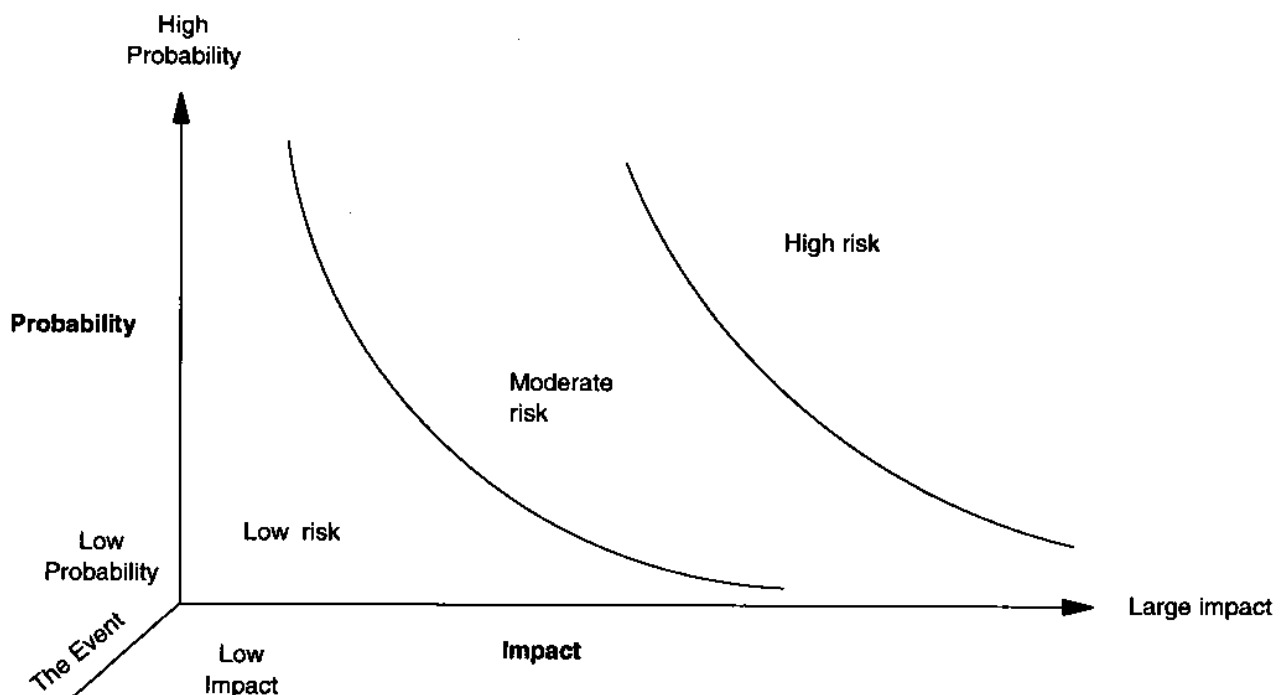
- An event
- Probability of the occurrence of that event
- Impact of that event (or amount at stake)

A risk event is a possible undesirable event or an unplanned opportunity. Risk could result in the project's not meeting one or more of its objectives.

PMBOK defines risk events as discrete occurrences that may effect the project for better or worse

Note: All projects have risk. If risks are ignored, you have increased the likelihood that the project will fail in some way or will be less successful.

Severity of Risk Is a Function of Its Components



Types of Risk

- Business vs. pure
 - **Business risk:** Normal risk of doing business with opportunity for gain or loss
 - **Pure risk:** Risk that presents an opportunity for loss only
- Known vs. unknown
 - **Known:** Risk we can anticipate
 - **Unknown:** Risk not planned for and not recognized

Risk Management

- An ongoing iterative process concerned with identifying, evaluating, mitigating, and monitoring risk throughout the project
- An integral part of project management
- A series of forward-looking, linked activities and processes that is designed to handle risk and reduce their probability or impact on the project

Risk Management Process

IBM

- Identification
- Evaluation
- Mitigation
- Monitoring

PMI

- Identification
- Quantification
- Response Development
- Response Control

Risk Management Process

CRM PMBOK IPD	Solution Design		Solution Delivery	
	Concept	Develop	Execute	Finish
	Concept	Plan	Develop Qualify	Close
	Risk Identification		Risk Identification	
	Risk Evaluation		Risk Evaluation	
	Risk Mitigation		Risk Mitigation	
			Risk Monitoring	

Life Cycle

Risk Management Process

CRM	Solution Design		Solution Delivery	
PMBOK	Concept	Develop	Execute	Finish
IPD	Concept	Plan	Develop Qualify	Launch
	Risk Identification		Risk Identification	
	Risk Evaluation		Risk Evaluation	
	Risk Mitigation		Risk Mitigation	
			Risk Monitoring	



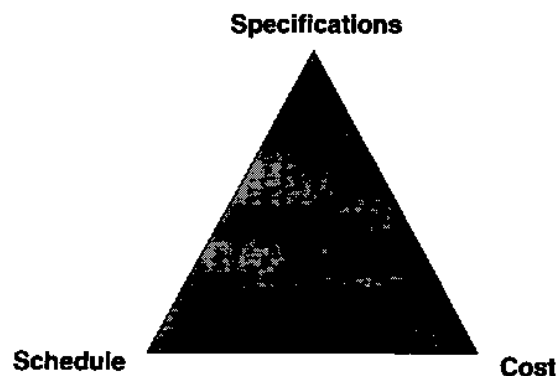
The Risk Management process is repeated several times until

The Risk Management process is repeated several times until an acceptable overall risk plan is achieved through applied mitigation strategies

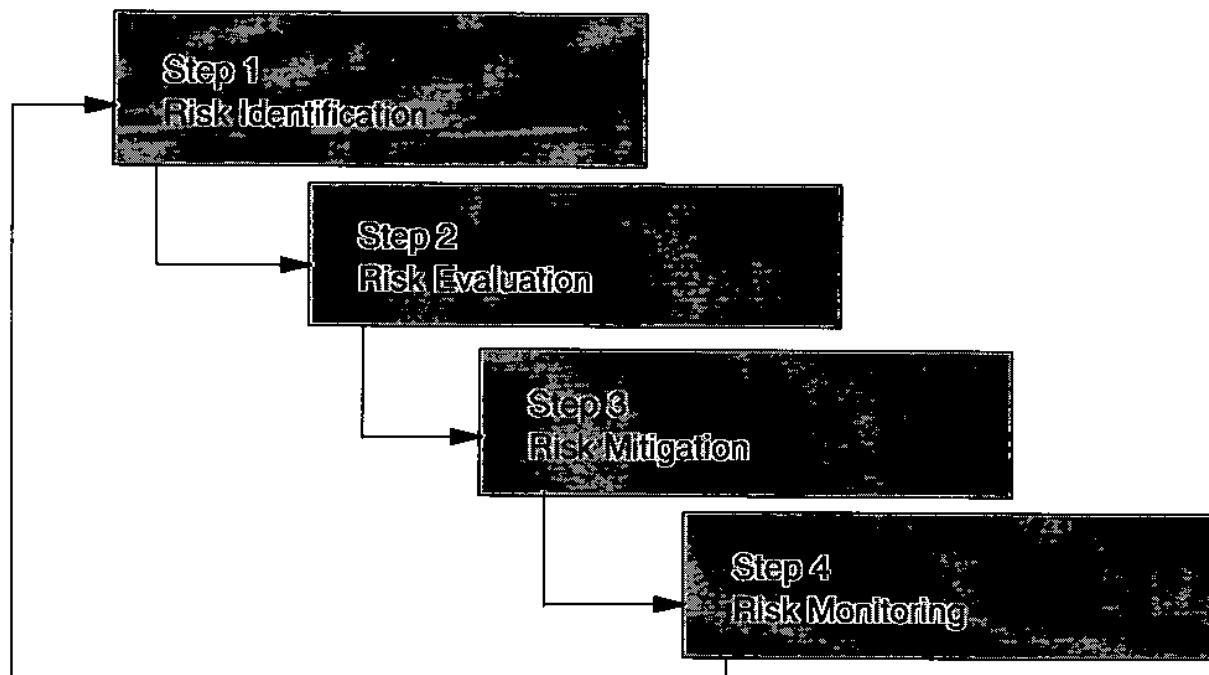
Life Cycle

Why Risk Management

- Protect
 - Cost
 - Schedule
 - Specifications
- Prevent surprises
- Focus on building the right offering the first time
- Prevent management by crisis
- Prevent problems from occurring or, if they do occur, from escalating



Risk Management Has Four Major Step

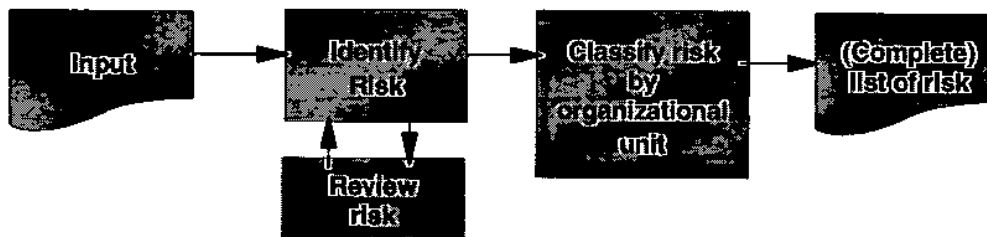


Note : Mitigation means to make less severe

The Project Manager's Role in Risk Management

- ▣ **Identifying and understanding risk events**
- ▣ **Planning to handle risk events**
- ▣ **Incorporating risk management into the project management planning process**
- ▣ **Using the right strategies (for example, containment or contingency) to fit the situation**
- ▣ **Monitoring risk events on a regular basis**
- ▣ **Reassessing risk events after each risk events**

Step 1 in Managing Risk: Identifying Risk Events



Input

- WBS
- Contractual requirements (statement of work)
- Field and marketing information
- Product plan assumption
- Earned value data
- Offerings portfolio
- Lessons-learned files
- Company objectives and plans
- Other project-related plans
- Schedule
- Review reports

Techniques

- IBM risk criteria and questionnaires
- Previous project lessons learned
- Idea-generation techniques
 - Expert interviews
 - Brainstorming
 - Nominal group technique (NGT)

Identify risk events

- Early
- Often
- Regularly
- At all levels

Consider Stakeholder Objectives in Risk Management



Sample List of Identified Risk Events

<i>RIN*</i>	<i>Source of Risk</i>	<i>Risk Event</i>	<i>Probability</i>	<i>Impact</i>	<i>Severity</i>	<i>Rank</i>
1		Incomplete UCD analysis results in user interface problem				
2		Insufficient time to perform product verification test				
3		Elements not fully integrated into OS public build				
4		No test suites available for required open systems standards				
5		Use of new IPD methodology will delay schedule				

* Risk identification number

Step 2 in Managing Risk: Evaluating Risk

Analyzing

- Determine:
 - Probability of occurrences
 - Impact of occurrence
 - Severity of risk (Severity = Probability and Impact)

Prioritizing

- Rank risks by severity
- Decide which risk are worthy of attention

Evaluating risk reduces event outcome uncertainty

Practical Approach for Analyzing Risk

- Estimate the probability and impact for each identified risk event
 - Quantify where possible
 - Quantify when necessary
 - Combination of both helps determine its final importance
- Identify worst, best, and most probable scenarios
- Assign risk analysis tasks to appropriate team members

Questions to Consider in Evaluating Risk

- Precedence: Has the risk event occurred before?
- Familiarity of the operation: Has the work been done before?
- Skills: Does the staff have the ability to do the work?
- Resources: Are there adequate materials to complete the work?
- Time: Is there enough time to complete the work?
- Quality: Is there confidence about the quality of work required?
- Cost: Is there sufficient funding to complete the work?

Quantitative Risk Rating System for Individual Risks

- Uses probability concepts - the likelihood that an event will occur or will not occur
- Basic rules of probability must be followed, for example, as in statement:

"There is a low probability that the integration test phase will be delayed by three weeks."

Severity Risk Rating System for Individual Risks

High	Likely to cause significant serious disruption to schedule, increase in cost, or degradation of performance
Medium	Has potential to cause some disruption of schedule, increase in cost, or degradation of performance
Low	Has little potential to cause disruption of schedule, increase in cost, or degradation of performance

Sample Severity Matrix

		Impact		
		Low	Medium	High
Probability	High	Medium	High	Unacceptable
	Medium	Low	Medium	High
	Low	Low	Low	Medium

Sample List of Identified Risk Events

* Risk identification number

Risk Id #	Source of Risk	Risk Event	Probability	Impact	Severity
1		Incomplete UCD analysis results in user interface problem	Low	Medium	
2		Insufficient time to perform product verification test	High	Medium (Users reject system-2 month to test)	
3		Elements not fully integrated into OS public build	Low	Low (\$5,000 and 1-week delay in time to market)	
4		No test suites available for required open systems standards	Medium	Medium (6-week delay in verification)	
5		Use of new IPD methodology will delay schedule	Low probability based on past project	Low (\$20,000 for training add 2 weeks to schedule)	

Practical Approach for Prioritizing Risk

- Group risk events by severity (group=high, medium, low)
- Rank analyzed risk events from highest to lowest
- separately rank risk events with similar severity
- Confer with team members to prioritize risk events
- Do not plan mitigation strategies as a part of this process

Sample List of Identified Risk Events

<i>Risk Id #</i>	<i>Source of Risk</i>	<i>Risk Event</i>	<i>Probability</i>	<i>Impact</i>	<i>Severity</i>	<i>Rank</i>
1		Incomplete UCD analysis results in user interface problem	Low	Medium	Medium	3
2		Insufficient time to perform product verification test	High	Medium (<i>Users reject system-2 month to test</i>)	High	1
3		Elements not fully integrated into OS public build	Low	Low (<i>\$5,000 and 1-week delay in time to market</i>)	Low	5
4		No test suites available for required open systems standards	Medium	Medium (<i>6-week delay in verification</i>)	Medium	2
5		Use of new IPD methodology will delay schedule	Low probability based on past project	Low (<i>\$20,000 for training add 2 weeks to schedule</i>)	Low	4

Step 3 in Managing Risk: Mitigating Risk

Risk mitigation involves:

- Assigning actions and strategies to contain, reduce, or eliminate risk events

The risk mitigation process includes:

- Establishing mitigation options
- Developing an action plan
- Reviewing the mitigation process

Practical Approach for Planning Strategies to Mitigate Risk

- Work down prioritized risk listing
- Identify various mitigation alternatives
- Evaluate alternatives and select a primary option
- Incorporate options into risk management/project plan (assign an owner)

Strategies to respond to Risk

Avoid	I am aware of this risk and I do not choose this option
Ignore/Accept	I am aware of this risk and I am willing to accept the consequences should the risk event occur
Contain	I am aware of this risk and I will take specific action to minimize its occurrence and effect
Establish contingency	I am setting aside funds to be used when the risk occurs or when later containment is deemed to be appropriate
Transfer	I am aware of the risk, and I will transfer a portion of it to another party

Containment vs. Contingency

Containment

- Tasks are added to WBS
- Eliminates or reduces specific risk
- Lowers the level of overall project risk
- Is estimated, scheduled, costed, and priced

Contingency

- Funds held in separate account for future use
 - Approach 1-overall
 - Reflects overall risk to the project
 - Is based on a percentage of the overall cost of the project
 - Approach 2-specific
 - Reflects a specific risk to the project
 - Is based on specific cost should the risk occur
 - May be less than the sum of containment (not all risk will occur)

Multiple Factors Affects Selection of Risk Mitigation Strategies

- Project phase and application
- Size
- Priority
- Complexity
- Expense
- Time available
- Cost of technique
- Required level of detail
- Ease of use
- Resource availability
- Project manager and upper manager's commitment
- Customer satisfaction

Note: There are many issues over which the project manager has little or no control. For example, the project manager does not control new laws, customer mergers, or team members who quit.

Sample Risk Management Plan

Rank	Risk Id #	Source Of Risk	Risk Event	Mitigation Actions	Action Required
1	2	Architect review	Insufficient time to perform product verification test	• Work available personal overtime • Plan activities • Negotiate with client/project sponsor for more time	
2	4	WBS review by test lead	No test suites available for required open systems standards	• Hire testing firm to validate open system standards	
3	1	WBS	Incomplete UCD analysis results in user interface problems	• Use Joint Application Design (JAD) to determine initial requirements • Use task analysis to better understand potential client/project sponsor's environment • Build prototype	
4	5	Contractual Requirements/ product plan	Use of new methodology will delay schedule	• Cancel annual leave, send staff to training • Hire outside expert to act as coach • Use on the job training approach give everyone the material and tell them they must know it by a certain date	
5	3	Company objectives and plans	Elements not fully integrated into OS public build	• Create OS development SWAT team to complete all necessary items quickly • Negotiate with senior management for more time	

Review Risk Management Plan

- Review with project team
- Obtain buy-in on the plan
- Get an independent review of the mitigation strategies, looking for:
 - Things you may have missed
 - Validation of your strategies
 - Possible alternatives to your strategies
- Update all related documentation

Make sure risk is made visible:

- In initial project review
- With client/project sponsor (unless it's a risk we can control)
- To management

Step 4 In Managing Risk: Monitoring Risk

- Implement and track risk management plan
- Communicate the plan's status to project team members and other stakeholders
 - Continually document events and actions taken
- Create a lessons learned database

After risk are evaluated and actions assigned, the risk must be monitored and managed

Risk Management Is a Continuous Process

- **After the risk management plan is prepared, continue to:**
 - Identify new risk, which may result from:
 - Changes in client/project sponsor, technology, organization, resources
 - Resurfacing of old risk
 - Time
 - Evaluate previously identified risks
 - Still possible?
 - Same probability and impact?
 - Mitigate
 - Is mitigation still appropriate?
 - Are actions required for this strategy?
 - Are backup strategies appropriate?
 - Document
 - Continuously keep current, accurate, complete, and simple
 - Communicate

Key Messages for Module 5

- Risk management is a continuous process
- Risk management is an essential element of a project plan
- The risk management plan should be reviewed with the project team on a regularly scheduled basis
- Stakeholder's views of risk differ

Risk can be managed



Basic Concepts of Project Management

Module V Team Exercise: Creating a Risk Management Plan

Page 1

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Module V - Team Exercise Creating a Risk Management Plan

- Identify the top 5 or 7 risks events that might be present in this project **for each of your assigned 2 or 3 subprojects** (14 or 15 risks total)
- Continue the risk management process by preparing a risk management plan that includes evaluation and risk response strategies
- Develop a Risk Action for the **top 2 or 3 risks for each subproject** (6 risks total)
- Add your Risk Actions (tasks) into your WBS
- Prepare to brief the project sponsor



Basic Concepts of Project Management

Module VI: Establishing a Project Estimate

Page 1

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Objectives

At the end of this module, you should be able to:

- Define an estimate
- Determine what to estimate
- Generate an estimate
- Recognize the difference between effort and duration
- Describe specific types and methods of estimating
- Discuss the estimating process
- Validate an estimate

What Are You Estimating ?

- Resources
 - Staff
 - Facilities
 - Material
- Cost
 - Direct
 - Indirect
- Duration

Before You Estimate the Number of People ...

- | | |
|------------------------------------|----------------------------|
| ■ Level of Effort | ■ Gifts (e.g. recognition) |
| ■ Tools | ■ Shipping |
| ■ Hardware | ■ Royalties |
| ■ Specialty Skills (e.g. security) | ■ Risk Contingencies |
| ■ Facilities | ■ Value Added Tax |
| ■ Travel & Living | ■ Licenses |
| ■ Training | ■ Vendors/subs |
| ■ Suppliers | ■ Insurance |
| ■ Infrastructure (e.g. networks) | ■ Admin. Costs |
| | ■ Other Division Expense |

Level of Effort Work

- Support type activity
- Does not lead directly to discrete measurement
- Uniform rate of activity over a specific period of time
- E.g., project management, communication, administrative (timekeeping), etc.

Estimating

Estimating is the process of determining
effort

AND / OR

duration

for the elements in the work breakdown structure (WBS)

**Some fundamental definitions must be understood
in order to perform this.**

Estimating - Considerations and Definitions

- **Start Effort:** time required to complete task
(usually measured in staff hours: person-hours)
- **Working time:** time available for work
(usually measured in working hours/day, working days/week, and so on)
- **Calendar time (elapsed time):** time required to perform the effort considering the working time (usually measured in calendar days, calendar weeks, calendar months)

Examples:

- It takes 24 staff hours to convert the presentation charts
 - Our staff person works 6 hours a day (working time)
 - How many working days to complete ? $24/6 = 4$ working days
 - Starting on Thursday, 6 calendar days (counting the weekend and no holidays)

Another example:

- Some task as above
 - We have two staff persons also working 6 hours a day (working time)
 - They can complete the work in $24 / (6 * 2) = 2$ working days
 - Starting on Thursday, it only takes 2 calendar days

Estimating - More Considerations and Definitions

- **Availability:** Staff person available and able (willing) to work
 - usually measured in working hours per day
 - working days (not vacations, not other work)
- **Productivity:** relative measure of work in a time unit
 - Person A can do the work in 9 hours, person B in 6 hours
Which person's productivity was used for the estimate ?
Was the estimate accurate enough to apply a productivity factor ?
or is that just a 'number game' ? ...
 - Rarely, only rarely, are estimates good enough to use with 'productivity factors'

Example:

- It takes 24 staff hours to convert the presentation charts (person B skills)
 - Instead we get a person with the assumed lower productivity ($6 / 9 = 0.67$)
 - Our staff person still works 6 hours a day (working time)
 - How many working days to complete ? $(24 / 6) / 0.67 = 6$ working days
 - ... and so on...

Utilization Factor

- Utilization factor: Amount of time that a full-time equivalent (FTE) can be used for the length of a project
- Hours available/year = 2,080 (52 weeks x 5 days x 8 hours)
- Example:

Education	=	80 hours
Vacation and holidays	=	160 hours
Administration	=	80 hours
Personal	=	90 hours
Other (travel, sickness)	=	70 hours
Total nonproject hours	=	480 hours
Total project hours (2,080 - 480)	=	1,600 hour
1,600 / 2,080	=	77% utilization
1,600 / 12	=	134 hours/month

Example of Utilization Guidelines

Project Length	Hours / Month	Utilization (Approx. Percentage)
3-6 month	176	> 80 %
6-12 month	130 - 140	75-80
> 12 month	120 - 130	70-75

Note: 176 hours / month = 22 workdays (8-hour days)

The shorter the length of the project, the higher the utilization

Estimating Task Duration Using Utilization Factor

- Assumption
 - Utilization factor of 80%
 - Estimated effort for the task is 40 hours
- Duration = Estimated effort / utilization factor
- Duration in hours
 - Duration = $((40 \text{ hours} / 0.8) / *8 \text{ hr/day})$
 - Duration = 50 hours / 8hr/day = 6.25 days

*8 hr/day = Utilization Rate

Estimating

Note:

- If the work is repeatable AND enough measurements of different groups are available, THEN we may obtain reliable and accurate productivity factors
- Contiguous duration: Work time that is not or might not be interrupted
- Interruptible duration: Work time that may be interrupted
- Level of effort: Activities necessary to support a project; difficult to measure in terms of discrete accomplishment and characterized by a uniform rate of activity

Special Cases:

- Level of effort (LOE): Activities of support type or activities which cannot be scheduled. Difficult to measure in term of discrete accomplishment and characterized by an overall effort.
 - For scheduling and resource-loading reasons, this may be spread evenly over appropriate periods

Estimating

Estimates:

- Effort
 - Usually measured in staff
 - When number of staff and their working time and / or availability is taken into account, the duration in working days may be calculated.
 - An 'average' productivity is assumed.
 - (avoid fancy 'productivity' number games)
- LOE
 - Usually measured in staff hours for the duration of the activity, resulting in an average load (e.g. 2 hours / week)
- Duration
 - Usually measured in working days
 - Used for fixed duration activities or simpler estimates (e. g. it will take 2 working days)
- When scheduling, specific resource availability and productivity may effect actual duration

What is an Estimate ?

- An assessment of the likely quantitative result
- Usually applied to project cost factors and to WBS
- Should include some indication of accuracy for example, + - n percent
- Usually used with a modifier, for example, preliminary, conceptual, feasibility

Estimating is not:

- An account strategy
- Pricing
- Investment marketing
- Client/project sponsor satisfaction
- Software or tools
- Finding the fastest way
- A Budget

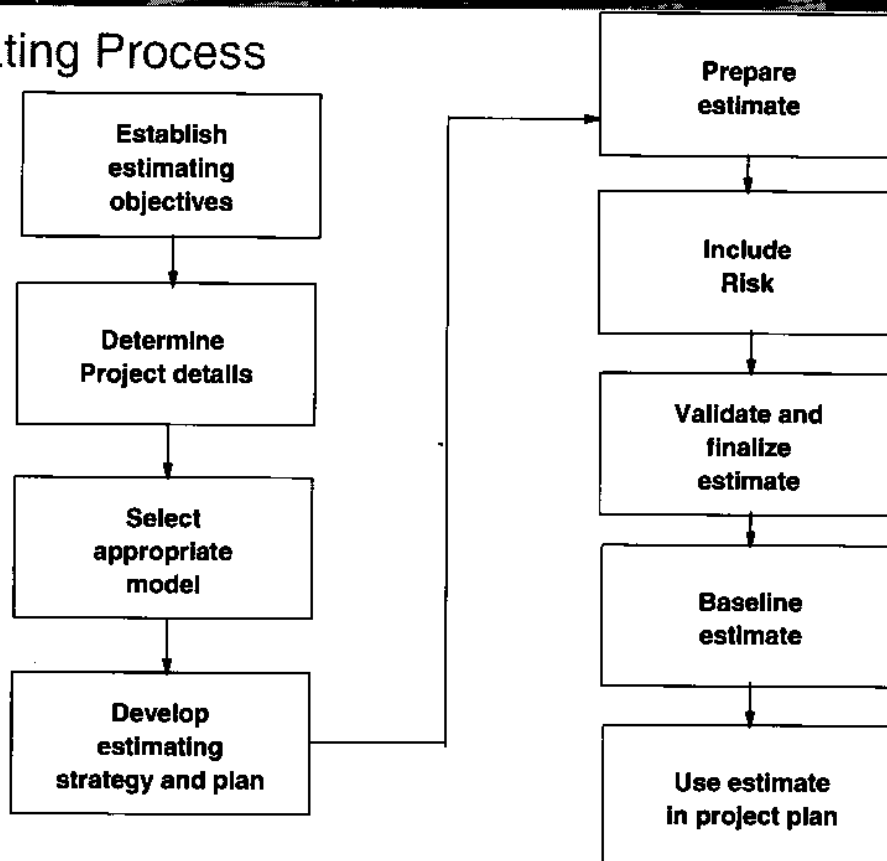
Reasons For Estimating

- To evaluate a project's estimated costs before authorizing implementation
- To provide a basis for tracking and managing project expenditures using activity-based costing or other methods
- To establish a managerial baseline against which to measure actual expenditures
- To provide the project manager with a tool for evaluating routine project decisions
- To provide fact-based information to support investment analysis
- To establish resources required and the resulting schedule

When Do You Estimate ?

- After the WBS is developed
- When determining whether to bid an opportunity
- Before you take over a project
- When you move into the next phase of the project
- Whenever the WBS changes
- Whenever there are authorized changes in resources, materials, services, and so on

Estimating Process



Fundamental Questions for Estimating

- Who or what do we need ?
- Who or what can do the work ?
- Who or what can we get ?
- What level of competence is essential ?
- How long will each work package take ?
- How will we use the resources ?
- How will they affect schedules and costs ?
- How much effort will project management activities take ?

Methods of Estimating

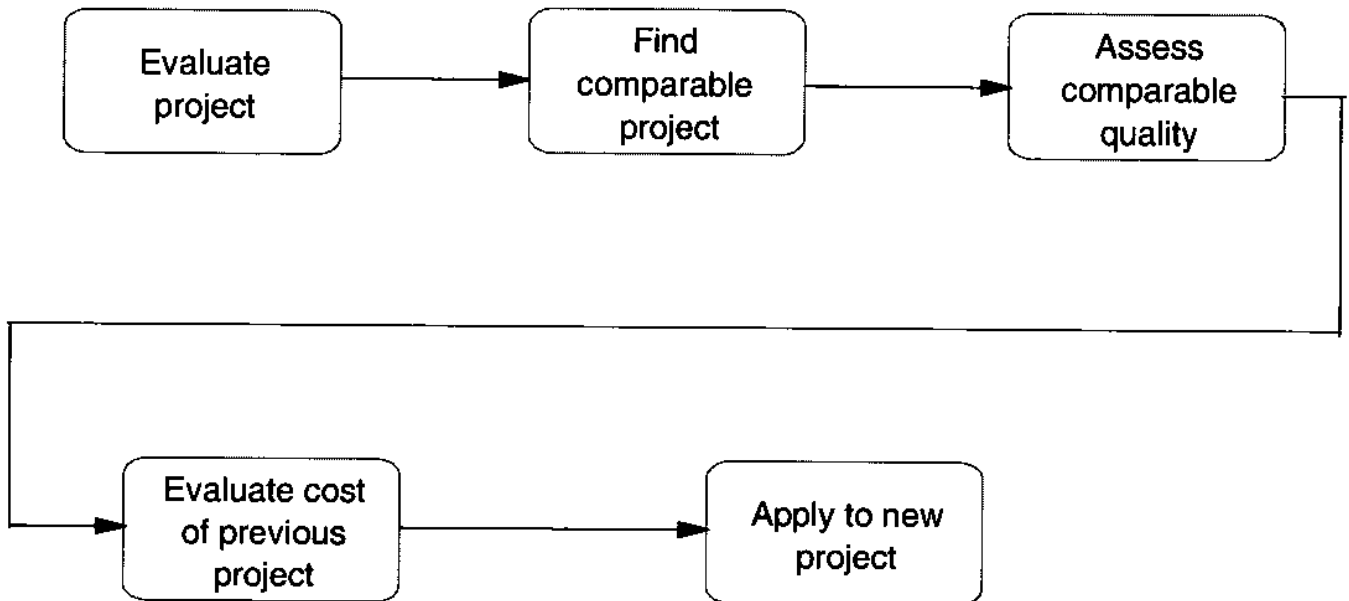
- Guess
- Supplier
- Parametric
- Analogy/comparison
- Expert judgment

TYPE	ACCURACY	USE	METHOD
Order of magnitude	-25% / +75%	Initial, Concept, Entry	Analogy/comparison Parametric Guess
Budget	-10% / +25%	Concept DCP CRM-RFI Preliminary Response to RFP	Analogy/comparison Parametric Expert judgment
Definitive	-5% / +10%	Plan DCP, CMR - Proposal	Analogy/comparison Parametric Expert judgment Supplier

Parametric Estimate

Specific measures used to estimate the effort required to complete a particular task or produce a particular work product, for example, dollars per square foot, hours per number of lines of code, dollars per gallon, or dollars per function point

Analogy / Comparison Estimating



Guidelines for Estimating

- Estimate effort based on average skill
- Estimate duration based on utilization rate
- Calculate cost based on assumed labor rate to obtain the cost estimate

Expert Judgment Estimates

- Used to assess input to the estimating process
- Expertise is provided by any group or individual with specialized knowledge or training

Approaches to Arrive at Estimate

Top-down

- High-level estimate of projects or their summary task based on parametric, analogy / comparison, or expert judgment
- Estimated based on collecting judgments and past experiences and on evaluating past data concerning similar activities
- Considered generally to be less costly and less accurate than other techniques

Bottom-up

- Estimating the effort of individual work items in hours
- Then summarizing or rolling up the individual work items to get a project total
- Cost and accuracy driven by the size of the individual work items

Sequence for estimating

The correct sequence to follow when estimating is:

1. Estimate effort
2. Based on utilization rate, get the duration
3. Assume skill level
4. Derive cost estimate

Bottom-Up Estimate

WBS	Name	Estimate	Sum	Cost
1	LAN Installation Project			34,380
1.1	Phase I - Planning and Design		440	
1.1.1	A- Kick Off Project	140		
1.1.2	B- Build Technical Requirements and design	220		
1.1.3	C- Review Functional Design	80		
1.2	Phase II - Installation Preparation		26,940	
1.2.1	A- Order Equipment	18,240		
1.2.2	B- Prototype System	1,200		
1.2.3	C- Preconfigure system and Test	3,300		
1.2.4	D- Prepare Site	4,200		
1.3	Phase III - Installation		5,000	
1.3.1	A- Install On Site	3,600		
1.3.2	B- Establish Documentation Protocols	200		
1.3.3	C- Generate Documentation	1,200		
1.4	Phase IV - Postinstallation		2,000	
1.4.1	A- Conduct Initial Orientation	1,800		
1.4.2	B- Review Installation	100		
1.4.3	C- Obtain Format Acceptance	100		

A bottom-up estimate is a very detailed estimate of work to be conducted from the work element up, aggregated to reflect total project cost

WBS Elements

The elements of a WBS (in order, by size) are:

- Phase
- Activity
- Task

Milestones are "markers" indicating the end of one of these elements, and the beginning of another

A work package is the lowest level to which you can assign an estimate

Definition

- **Cost estimating:** Estimating the costs of the resources needed to complete project activities
- **Cost budgeting:** Allocating the cost estimates to individual project components so they can be measured or managed

Validating an Estimate

- Review the definition of the project
- Study ground rules, constraints, and assumptions
- Focus on sources of data
- Compare the estimate with established standards
- Determine whether the methodology is acceptable
- Focus on cost drivers
- Determine whether the estimate meets the objective
- Use a different approach to validate the estimate
- Ensure that all mitigation task are in place

The Principles of Estimating

- Use the approach most appropriate and the method that is the most accurate
- Communicate the level of accuracy
- Involve the project team in the estimating process
- Base estimates on history
- Use standards (if available)
- Do not back into estimates. (Do not start with a presumed result, then work to justify this results.)
- Do not pad estimates
- Recognize that estimating takes time
- Document your assumptions
- An estimate is not an estimate if it is not written (assumptions and approach), in addition to numerical values

Key Messages for Module 6

- Select the most appropriate approach and the most accurate estimating method for your project
- Estimating involves resources (human resources, facilities, and material) and expenses/costs (direct and indirect)
- Estimates should include an indication of accuracy (for example, + - percent)
- An estimate is not a budget
- Consider the effort (amount of resources consumed in completed deliverables) vs. duration (the number of working days during which the task occurs)
- Validate and finalize the estimate
- Use the estimate in the project plan

Basic Concepts of Project Management

Module VI Team Exercise: Establishing a Project Estimate

Module VI - Team Exercise Establishing a Project Estimate

- Based on your WBS, prepare a detailed bottom-up estimate for each of **your 2 or 3 subprojects**.
- Estimate person-hours per task (*estimate task effort*), then apply costs to the hours (*estimate task **resources** \$ cost*). Determine the count of material units and add calculated costs of materials used (*estimate task **material** \$ cost*).
- Include in your estimates the cost of resources and materials. estimate for each work package (*estimate of resources \$ cost, estimate of materials \$ cost*).
- Be sure to estimate the duration for each work package as well (*computed **duration** in days*).
- Be prepared to present your estimate at a summary level (MS Project 2000).



Basic Concepts of Project Management

Module VII: Creating a Project Schedule

Page 1

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Objectives

At the end of this module, you will be able to:

- Define networks and schedules
- Identify types of schedules
- Describe specific scheduling considerations, including:
 - ▶ Schedule development
 - ▶ Resource loading

Page 2

Basic Concepts of Project Management

2

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Schedules

A schedule is:

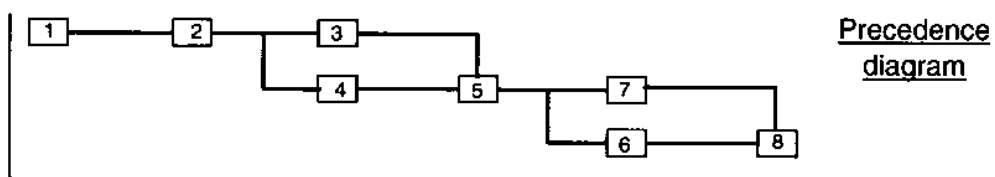
- The planned dates for performing activities and for meeting milestones

Use the schedule to:

- Determine whether you meet or beat your objectives
- Track and communicate your project's progress and status
- See how a possible change could affect the project
- Assign tasks to your staff

Types of Project Views

Tasks



Task 1

Task 2

Task 3



Tasks:

1. Design

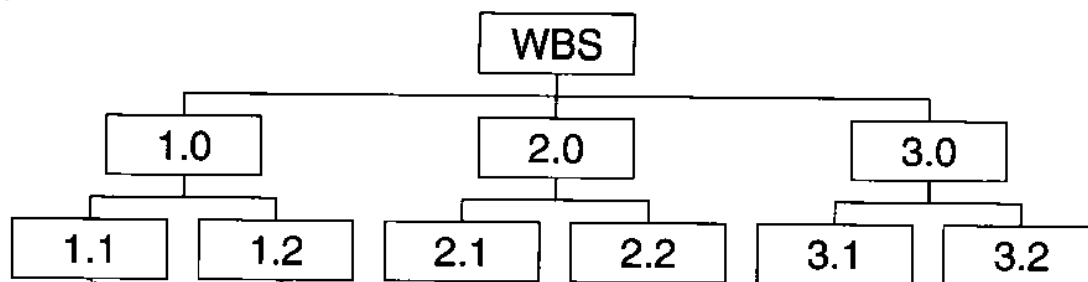
2. Build

3. Test

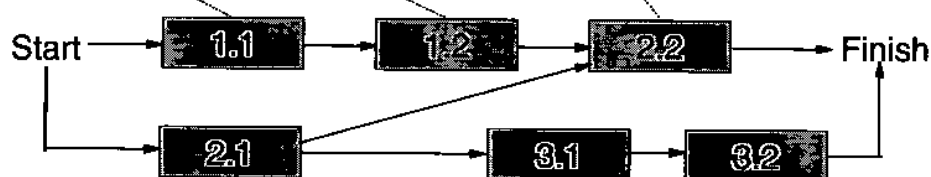


Network Relationship to the WBS

WBS



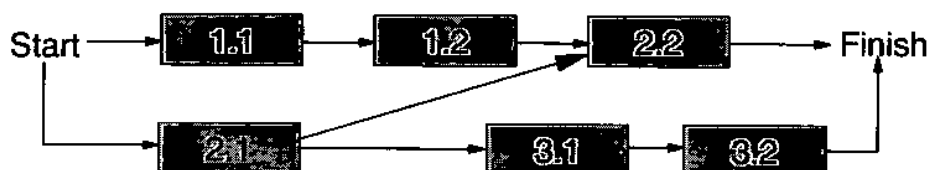
Network



Method for Creating Networks

Precedence diagramming method (PDM)

- A network diagramming technique in which activities are represented by boxes (or nodes), each box represents an activity
- Activities are linked by precedence relationships
- A schematic display of the logical relationship of project activities
- Drawn from left to right to reflect project chronology
- Often incorrectly called a PERT chart



Network Diagram Guidelines

- The network diagram starts with a task/work package/activity or milestone - 1 or 0
- The network diagram ends with a task/work package/activity or milestone
- There are predecessors for all activities (except the first)
- There are successors for all activities (except the last)
- The network logic must be updated and current
- There are no loops

Basic Scheduling Terminology

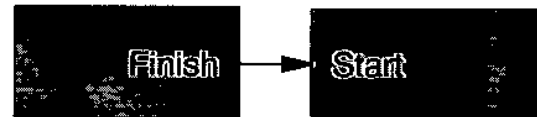
- **Activity:** A task (work element) performed over a period of time; a specific piece of defined work from a WBS
- **Milestone:** Marker, significant event, denotes achievement (time, money, task). Milestones can have owners
- **Milestone:** An activity that denotes achievement but has zero time and zero dollars associated with it
- **Milestone:** Represents the start or finish of a significant event
- **Relationships:** Dependencies that exist between activities
- **Lag time:** Any delay imposed on the relationship between two activities
(Tempo morto)
- **Lead time:** Modification of a fixed relationship to accelerate the start of a successor task

Precedence Relationships in Precedence Diagramming Method (PDM)

1 of 3

Finish-start (FS)

- Pour the concrete; raise the frame
- Define requirements; write the code
- Set budget; select design

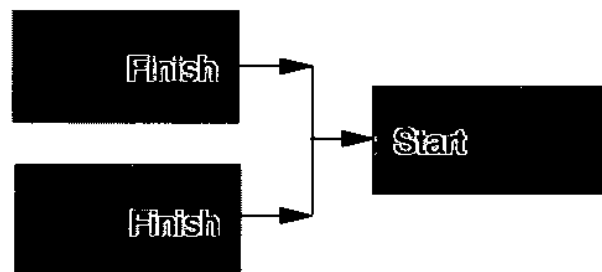


Precedence Relationships in PDM (continued)

2 of 3

Finish-finish (FF)

- Want them complete at the same time
- Examples:
 - ▶ Bake the turkey; bake the yams
 - ▶ Reproduce disks; generate documentation
 - ▶ Select a design; allocate funding
 - ▶ Write code; buy a PC

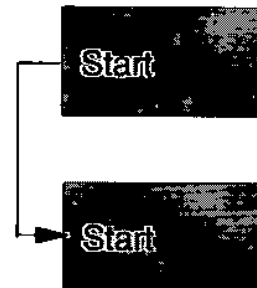


Precedence Relationships in PDM (continued)

3 of 3

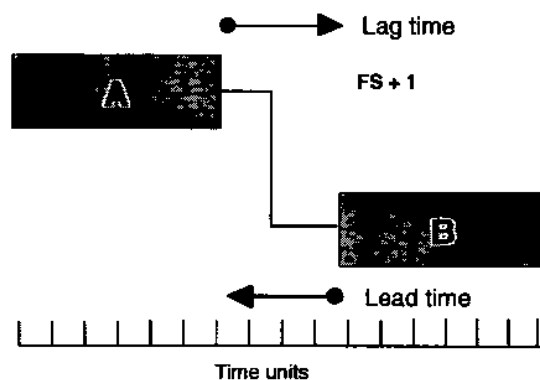
Start-start (SS)

- Define relationship but not necessary the same time
- Examples:
 - ▶ Write text; edit text
 - ▶ Install plumbing; install wiring
 - ▶ Select a design; select vendors

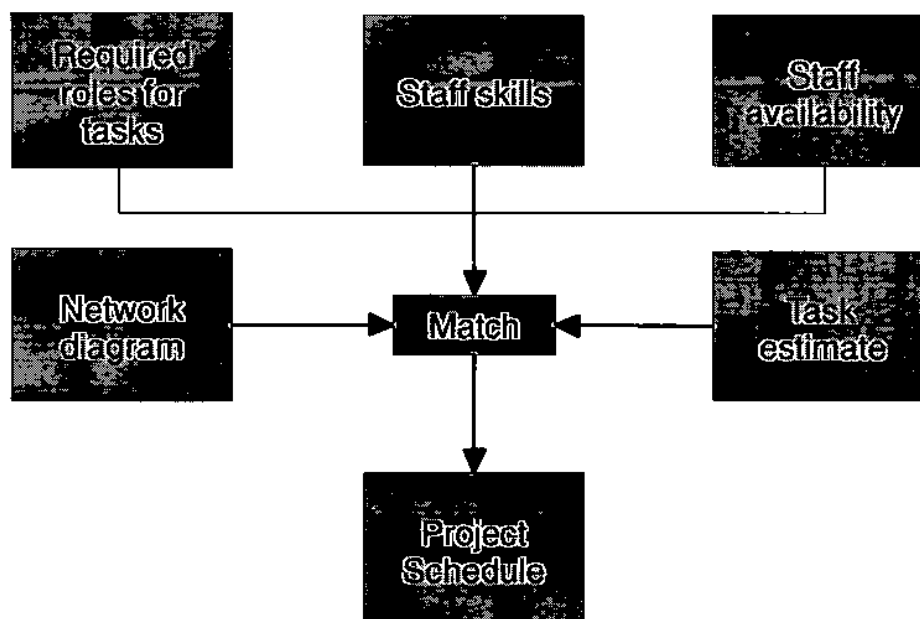


Lag Time / Lead Time

Definition: A change of a relationship that directs a delay in the successor task



Validating Schedule Assumptions



Generating the Schedule

Before finalizing the schedule, examine:

Roles

- Is there a complete set of roles for each task ?
 - Action: Add roles where needed

Staff

- Who will fill these roles ?
 - Action: Assign staff

Skills

- Do the staff assigned possess the needed skills ?
 - Action: Add or change people or re-estimate the duration to allow time to improve skill levels

Availability

- When will the people really be available ?
 - Action: Reschedule around nonavailable time
 - Action: Change utilization assumptions to adjust duration
 - Action: Add more staff

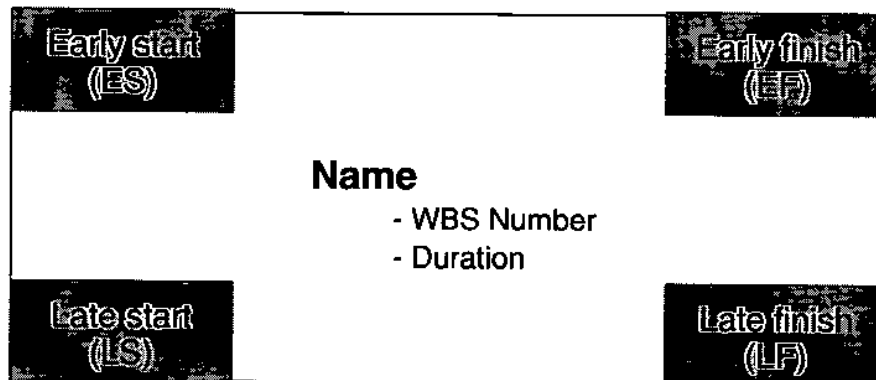
Add Project and Technical Management Tasks

- Usually level-of-effort tasks
- Include but are not limited to:
 - Change control management
 - Risk management
 - Communications management
 - ♦ Status
 - ♦ Interfaces with other organizations
 - ♦ Client/Project sponsor
 - Progress management
 - Contract management
 - Project management
- Include more than just the project manager's time !

Scheduling Terminology

- **Early start (ES):** Earliest possible time at which an activity can start
- **Late start (LS):** Latest possible time at which an activity might begin without delaying the project finish date
- **Early finish (EF):** Earliest possible time at which an activity can finish
- **Late finish (LF):** Latest possible time at which an activity can be completed without delaying the project finish date
- **Free float:** The amount of time an activity can be delayed without delaying the early start of any immediately following activities
- **Total float:** The amount of time that an activity may be delayed from its early start without delaying the project finish date
- **Critical path:** Longest path through the network. It is also the shortest possible time to complete the project

Applying PDM Theory



Forward Pass

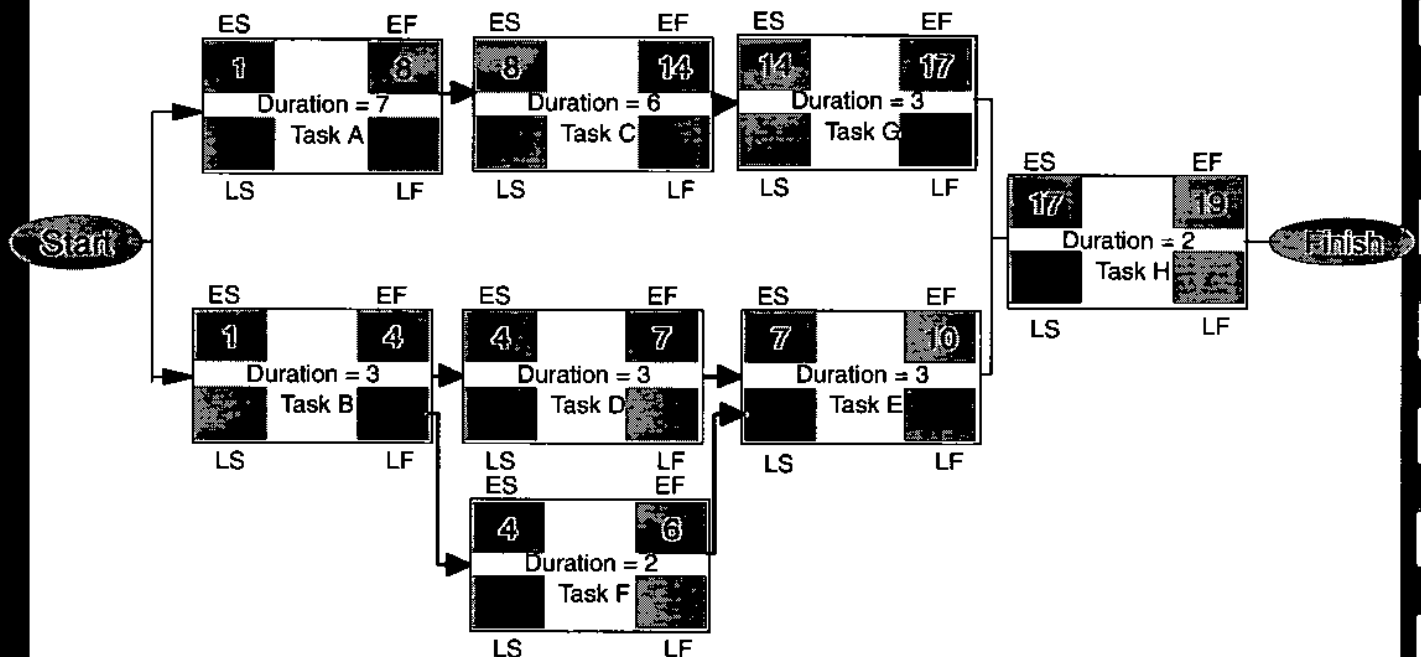
1 of 2

- Established: Project start date
- Project start date is the early start date for first network activity
- Work from left to right, top to bottom of the network
- When an activity has multiples predecessors (P), select highest early finish date as early start date of successor (S)
- Calculations:
 - $ES + Duration = EF$
 - $EF + Lag = ESS \text{ (successor)}$

Forward Pass Example

2 of 2

Full precedence diagram



Backward Pass

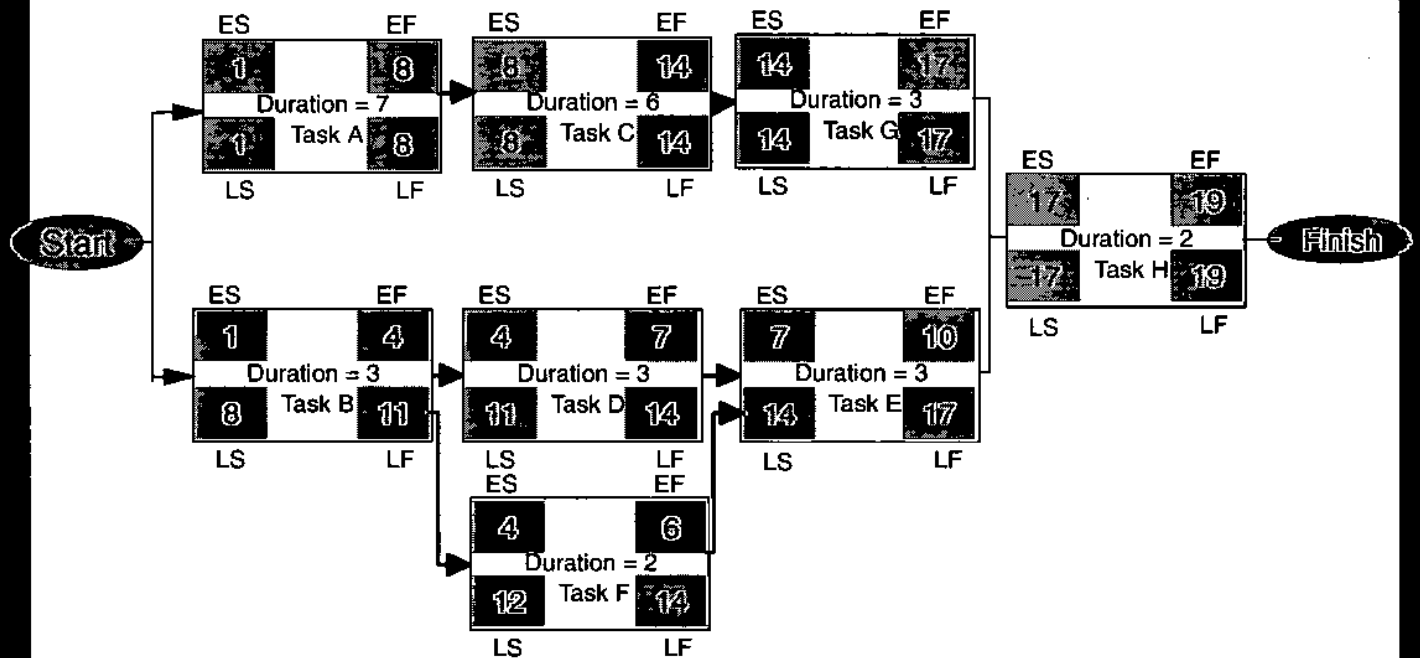
1 of 2

- Established: Project finish date (from last activity in forward pass)
- Project finish date is the late finish date for last network activity in the backward pass
- Work right to left, top to bottom of network
- When a predecessor (P) has multiple successors (S), select the lowest late start date as the late finish of the predecessor
- Calculations:
 - $LF - Duration = LS$
 - $LS - Lag = LF_p \text{ (predecessor)}$

Backward Pass Example

2 of 2

Full precedence diagram

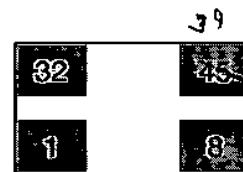
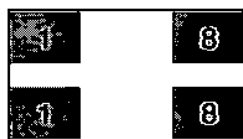
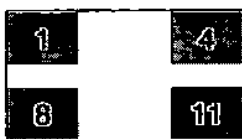


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Float / Slack

- Float = Late finish - Early finish
- Float = Late start - Early start
 - Float > 0 (time is available)
 - Float = 0 (situation is critical)
 - Float < 0 (project is behind / critically late)



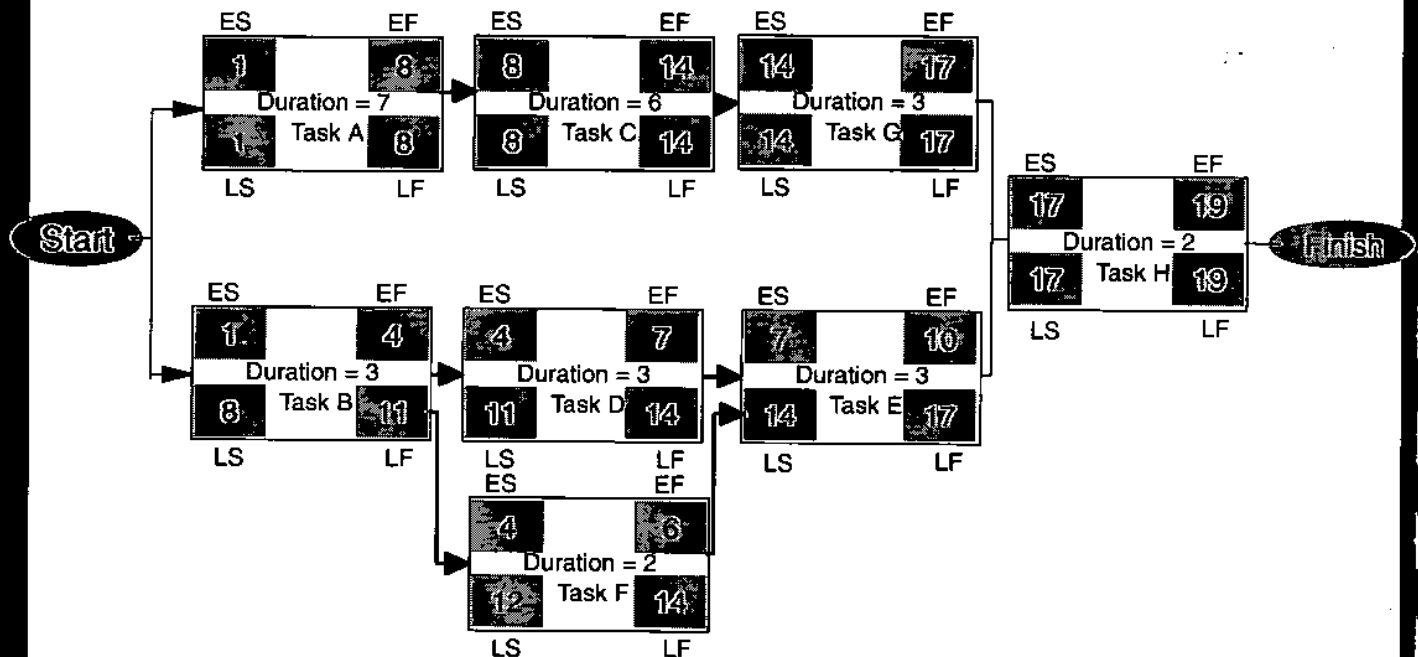
Float is sometimes known as slack

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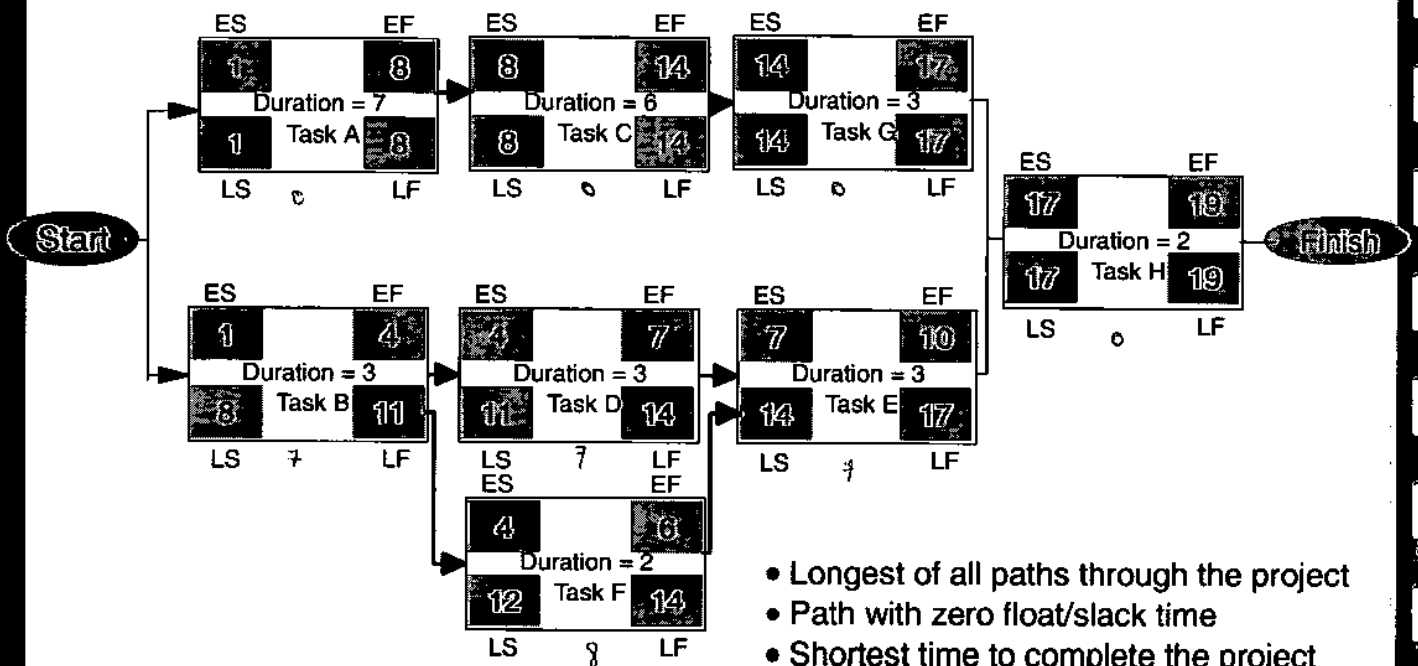
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Float Example

Total float = LS - ES or LF - EF



Critical Path



- Longest of all paths through the project
- Path with zero float/slack time
- Shortest time to complete the project

Steps in Computing a Precedence Network Schedule

1. Identify all tasks from the WBS
2. Establish predecessor and successor relationships, assuming resource independence
3. Complete the process unit all predecessors and successors have been identified
4. Assign resources to tasks to generate duration
5. Calculate the forward pass; when multiple dates must be passed forward, select the latest date
6. Find the early finish date of the project
7. Calculate the backward pass; when multiple dates must be passed forward, select the earliest date
8. Calculate float
9. Identify the critical path and near-critical path *20% margin critical*
10. Validate the network to ensure that it is correct and complete
11. Become familiar with the characteristics of the network
12. Adjust schedule, if possible, to meet commitment

Network Analysis

- Ensure that your network is complete and current
 - ▶ Have you correctly identified your critical path ?
 - ▶ Should any task with large amounts of float be rescheduled ?
 - ▶ Are there any danglers ? *(Why also pre-estimate pendents?)*
- Become familiar with your network and analyze it
 - ▶ What risks are on the critical path ?
 - ▶ Is there a near-critical path ?
 - ▶ How much float is available ?
 - ▶ What types of float exist on which tasks ?
- Ensure that your objectives can be met
 - ▶ Do you need to add any milestones ?
 - ▶ Which tasks involve external deliverables ?
 - ▶ Can the work be completed in the desired time frame ?
 - ▶ Will deliveries be made on time ?

Adjusting the Schedule to Meet Objectives

Ways to meet schedule objectives

- Change the relationships among tasks so that the critical path is shorter (fast-tracking)
 - ▶ Do tasks in parallel, not in sequence
 - ▶ Change approach to work to create a different set of interrelated tasks with a shorter critical path (Note: This may change the WBS)
 - ▶ Change a finish-start relationship to a finish-finish relationship
- Change a date constraint so that a task on the critical path can start or end sooner
- Crash the network (1) to decrease the total project duration after analyzing alternatives to see how to get the maximum duration compression for the least cost

(1): Crash the network- Decrease total project duration after analyzing alternatives to determine how to get the maximum duration compression for the least cost

Initial Schedule Is Complete
But Is It Reality ?

Key Messages for Module 7

- A schedule is built from the tasks on the WBS
- A schedule is built using logical relationships between tasks
- A schedule will lead to identifying the critical path
- Network analysis is important to developing a realistic schedule
- Schedules are dynamic and need to be actively managed
- Include project and technical management tasks in the schedule
- Validate your schedule assumptions and analyze and adjust your schedule as need

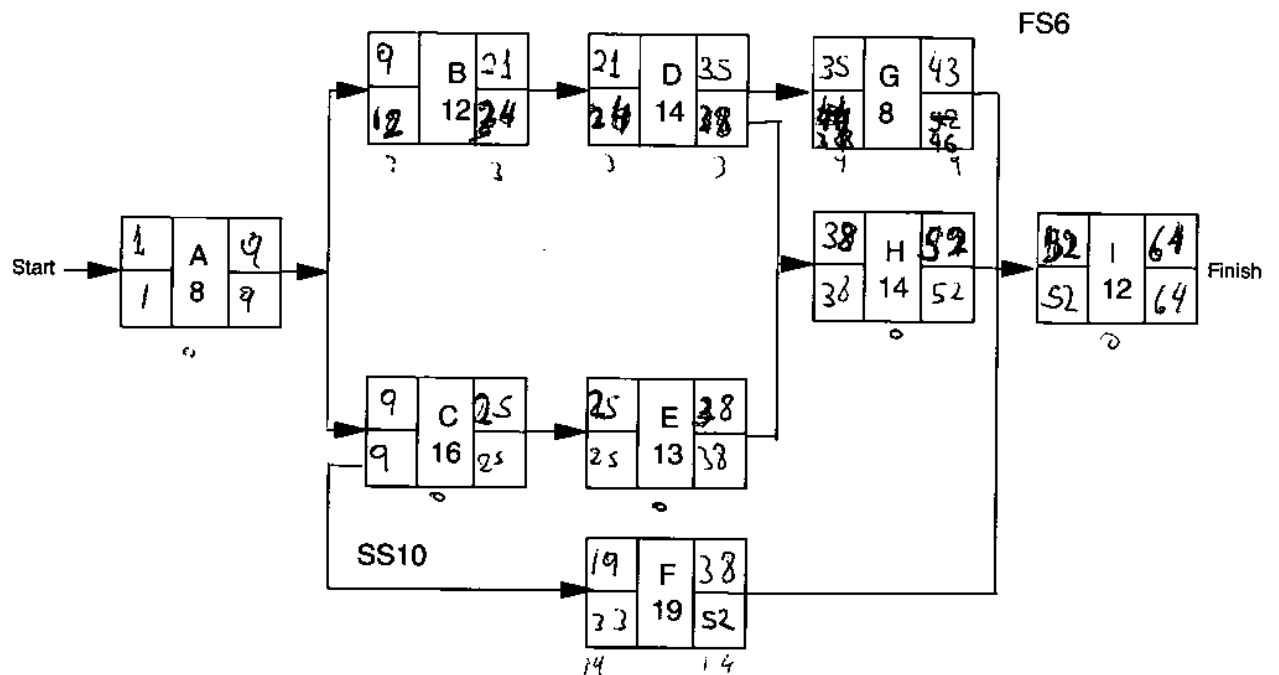
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Module VII Team Exercise: Calculating the Critical Path

Module VII - Team Exercise Calculating the Critical Path

- Calculate the critical path by yourself, then share it with your team and discuss it
- Calculate the forward and backward passes
- Calculate the float for each path
- Each team will present one critical path calculation

Module VII - Team Exercise Calculating the Critical Path



A C E H I = Auto Critical

Basic Concepts of Project Management

Module VIII: Establishing a Change Management Plan

Objectives

At the end of this module, you should be able to:

- ▶ List the required baselines for managing a project
- ▶ Describe change management
- ▶ Discuss why change management is important in project management
- ▶ Describe what should be included in the change management process
- ▶ Identify types of changes
- ▶ Describe the typical follow-up actions to change requests
- ▶ List the elements of a change request form
- ▶ Discuss the project manager's role in change management

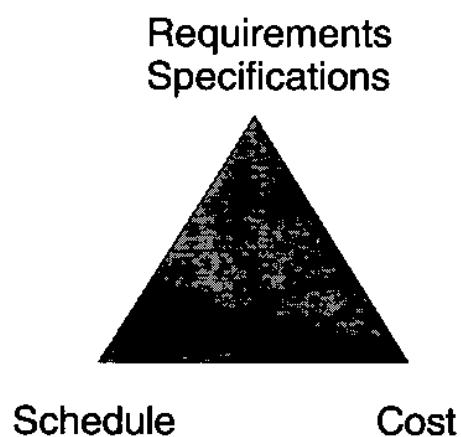
Baselines

A Baseline is established:

- Before execution
- After each approved change



Required Baselines for Managing a Project



Without baselines, Scope = ∞

What is Change Management ?

- The procedures that manage and control the baseline(s)
- A change control system:
 - ▶ Includes *formal* documented procedures to define how to manage change
 - ▶ Establishes paperwork, tracking systems, and approval levels necessary to authorize change

Why Manage Change ?

Change management:

- Is the single most important problem facing the project management team
- Affect cost, schedule and specifications
- Could result in contract changes and amendments
- Can originate from anywhere

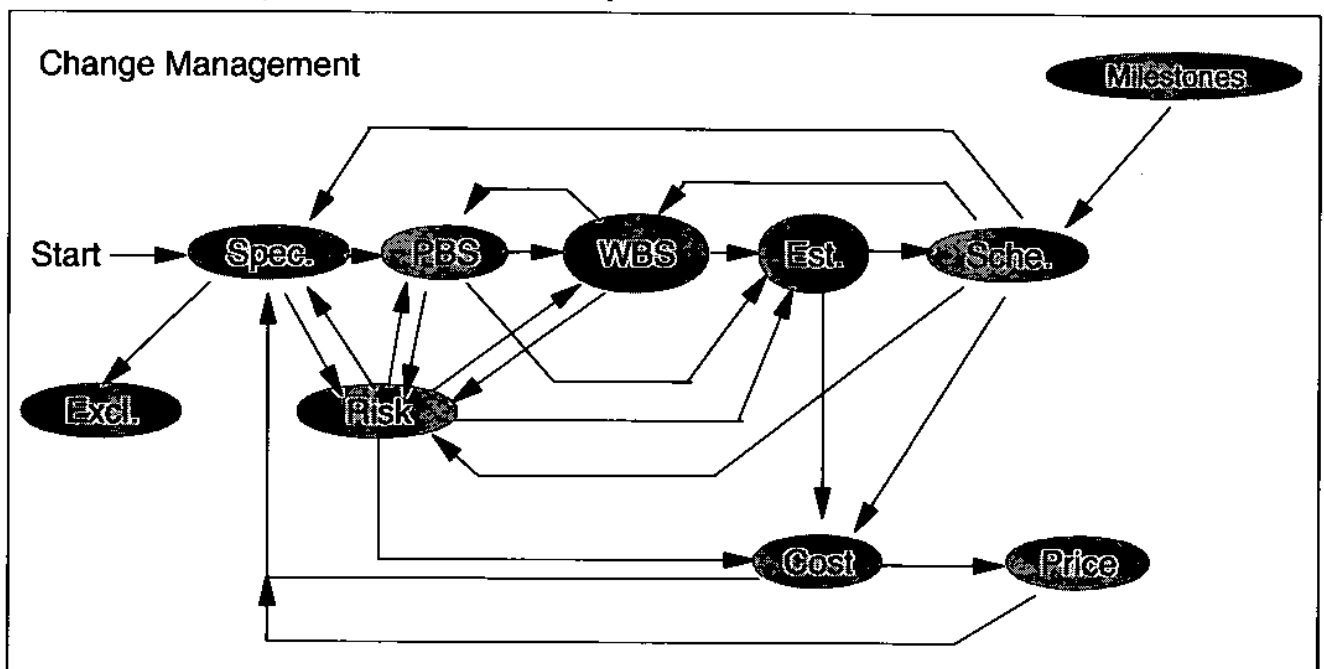
**With baselines and no change control, scope will become infinity
($S = \infty$)**

Change Management Procedure Must Include:

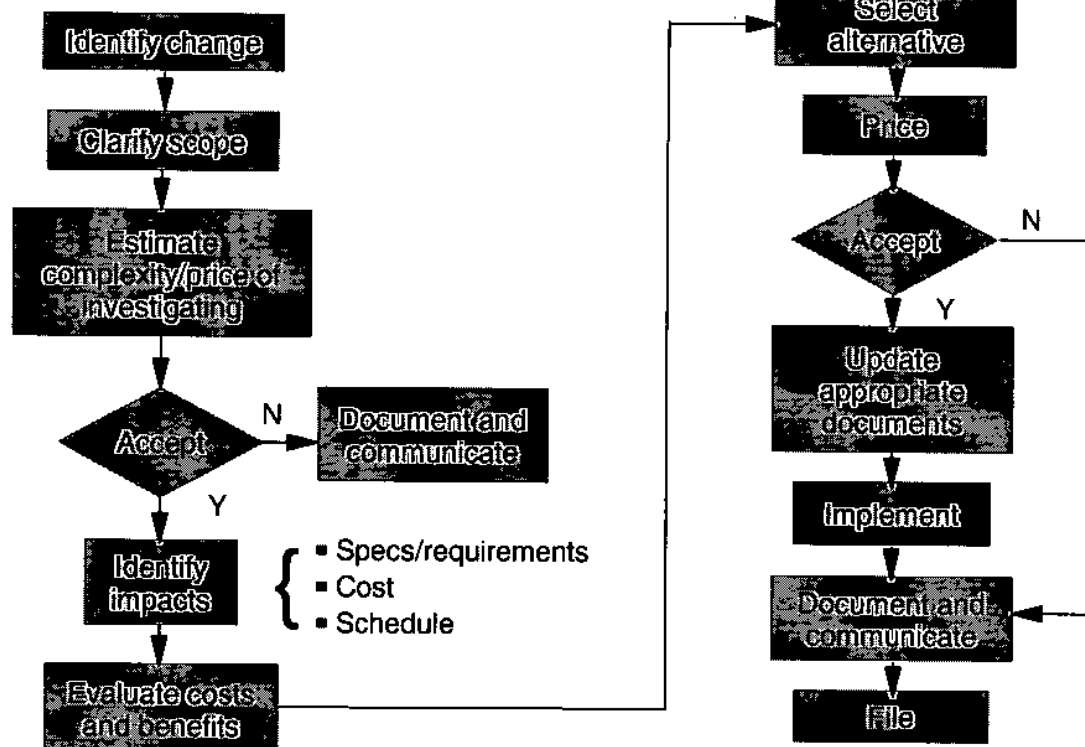
- Change control process
 - Change request form
 - Change control authority (Change Control Board in the U.S.)
 - Receive
 - Review
 - Recommend
- Change control log
 - Accept
 - Reject
 - Defer

Change Management Process

Change management is an iterative process



Change Management Process



Elements of a Change Request Form

- Change request number
- Date of the change request
- Name of the person requesting the change
- Description of a change
- Estimate of the price of investigation
- Statement of the change's effect on the project
- List of tasks and staff affected by the change
- Estimate of the price of the change
- Signature of the authorized representatives
- Time limitation on implementing the change request
- Time limitation on investigation
- Authorization to proceed
 - ▶ Investigation
 - ▶ Implementation
- Effect on related projects

Change Request Form

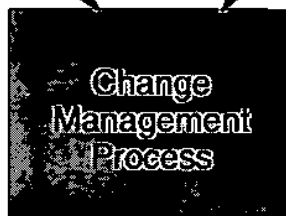
Date Raised		Raised by		Number	
Summary					
Detailed Description					
Investigation					
Cost of Investigation: \$					
Approval: Yes		No			
Evaluation					
Date Required		Priority			
Evaluation Summary					
Total Cost		Comment			
Sub-Project		Cost		Comments	
----		----		----	
----		----		----	
Implementation					
Decision: Accept / Reject / Defer			Signed		
Incorporate Into Plan By					
Implemented By			Expiration Date		

Types of Changes

Changes comes in two ways - both require the same attention

Technical Changes

- Implementation of solution
- Usually internal
- Usually in scope



Contractual Changes

- Terms and Conditions
- Scope of work
- Requirements
- Schedule
- Costs
- Usually external
- Usually out of scope

A formal change management process must be established and use, and include written change orders on ALL projects, both small and large

Who Can Authorize Change ?

- Only authorized representatives accept, reject, defer or negotiate changes
- Authorized representatives must be designated in writing
- Change requests must be in writing

Typical Follow-Up Actions for Change Requests

Status Change Request	Within the Scope of the Contract	Out of the Scope of the Contract
Accept	• Plan incorporation into system creating new baselines • Establish schedule and resources	• Prepare proposal, including price to client/project sponsor • Do not implement until contractual agreement is reach • Revise contract
Reject	• Communicate and document the decision *	• Communicate and document the decision *
Defer	• Direct team to perform further analysis and/or consider alternatives and /or hold until a specified time	• Direct team to perform further analysis and/or consider alternatives and/or hold until a specified time

* It is important that the originator of the change understand the rejection rationale

The Project Manager's Role in Change Management

- Analyze change requests
 - ▶ Assess the effects of the change: risk, baseline
- Manage the scope
 - ▶ Accept or reject change
- Revise baselines

Guidelines for Managing Change

- Change control should be introduced early in the project
- Determine how changes are to be introduced and processed as part of the project plan
- Use a change request to document any proposed changes
- Ensure that changes are approved in writing by the authorized representatives
- Update the baselines and all appropriate documentation after the change is approved

Key Messages for Module 8

- Changes will occur and cannot be ignored
- Changes originate from two sources:
 - ▶ Stakeholders
 - ▶ Project team members
- Changes may be:
 - ▶ In scope (no additional cost to client/project sponsor)
 - ▶ Out of scope (usually additional cost to client/project sponsor)
- Change affects the triple constraints (Schedule / Cost / Requirement)
- The project team *must work with the same baselines* to meet project objectives
- Thus, a formal change process is required

Change management is your friend



Basic Concepts of Project Management

Module VIII Team Exercise: Handling a Change Request

Page 1

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Module VIII - Team Exercise Handling a Change Request

- You just received Change Request # 97 in a memo from Perry Fields. The customer is requesting a change. How are you going to handle it? Document each of the steps you would take.
- Hint: The first step is logging the change in the Change Log.

Change Request Form

Date Raised	Raised by		Number
Summary			
Detailed Description			
Investigation			
Cost of Investigation: \$			
Approval: Yes		No	
Evaluation			
Date Required	Priority		
Evaluation Summary			
Total Cost	Comment		
Sub-Project	Cost	Comments	
....			
....			
Implementation			
Decision: Accept / Reject / Defer		Signed	
Incorporate Into Plan By			
Implemented By		Expiration Date	

Basic Concepts of Project Management

Module IX: Managing and Controlling the Project

Page 1

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Objectives

At the end of this module, you should be able to:

- Distinguish between project management and project control
- Describe the framework for project management
- Describe the components of project control
- Describe the purpose of project control
- Explain the use of earned value
- Calculate the earned value
- Interpret status measurements
- Recognize when a project is out of control

Project Management

"The project manager is expected to integrate all aspects of the project, ensure that the proper knowledge and resources are available when and where needed, and above all, ensure that the expected results are produced in a timely, cost effective manner" - Meredith and Mantel, 1995, p. 4

→ go to satisfaction of all clients

Project Management Context

Concepts

Life Cycle Concepts
Understanding Team Dynamics
Managing Teams

Business Processes

{ IPD
CRM

Concept Plan

Develop Quality Launch

Solution Design

Solution Delivery

Project Management Activities

Planning (Startup)

Performance (Manage)

Opening the project WBS Estimating Scheduling

Scheduling and cost Management Project Closeout

Establishing Relationships with Stakeholders

QA1

QA2

QA3

Quality Assurance

QA4

QA5

QA6

Risk Management

Change Management

Issue Management

Project Control

"Control is the process of monitoring, evaluating, and comparing planned results with actual results to determine the status of the project's cost, schedule, and technical performance objectives" - David I. Cleland, 1994, p. 285

Why Is Controlling the Project Important ?

Without control:

- Scope = ∞ (scope creep)
- Costs skyrocket
- Risks increased
- Schedules are missed

Four Stages of Control

- Establish standard
- Observe performance
- Compare actual and planned performance
- Take corrective action

Use of a Project Control Book

A project control book is a collection of generated documents, which may contain multiple volumes

Use:

- As a basis for reviews and audits
- As an information repository for team members
- As a tool for other project managers (on or off the project)

Defining the Project Control Book

Project Management Plan: Plans / Procedures

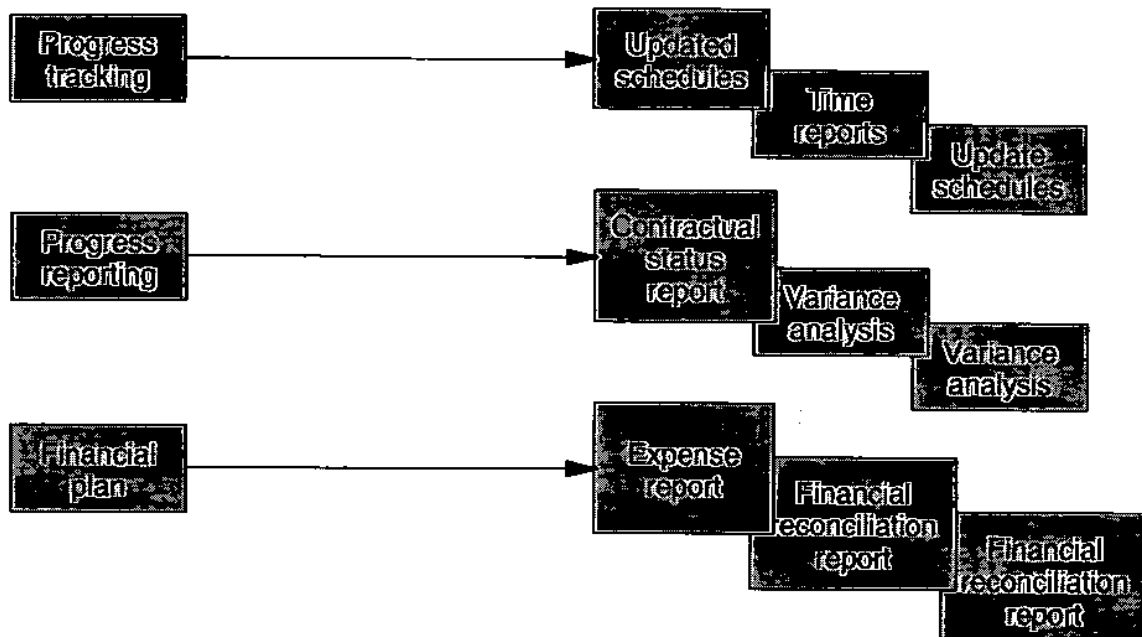
- Project tracking and evaluation
- Financial management
- Reporting
- Risk management
- Supplier management
- Quality management
- Change management
- Issue and problem management
- Contract management
- Organization and people management
- Deliverables management

Project Control book: Results / Output

PCB Plans/Results Examples

Project Management Plan: Plans / Procedures

Project Control Book: Results / Output



Relationship Management Is Part of Project Control



Guidelines for Monitoring a Project Plan

- Focus analysis on one cycle of time back and three cycles forward
 - ▶ Example: one week back, three weeks forward
- Identify work completed
 - ▶ Support people doing a good job
- Evaluate work that is late starting or completing
 - ▶ What is the effect on schedule and budget ?
 - ▶ What actions can you identify to mitigate these impacts ?
 - ▶ Who should be responsible for any actions ?
- Evaluate work that will be starting
 - ▶ Ensure that owners know and agree that their work can start on time
 - ▶ Apply risk analysis techniques
- Evaluate work due to completion
 - ▶ Check with owners to ensure that work is on target
 - ▶ Evaluate trends and other data that supports the owners' opinions
- Provide update estimates for task completion
- Conduct project reviews
- Communicate status regularly
- Track issue and problem resolution

Issue Management

Problem - A cause for concern that is in the PM's domain of control. PM has the enablers to fix this problem.

Issue - A problem that is affecting PM's area of control; PM does not have all the enablers within his/her domain of control to fix it. PM must derive an issue to the area of control that can resolve the problem.

- Manage issues by documenting, assigning responsible parties, and tracking them through resolution. An issue management form should be filled out with:
 - Issue number
 - Responsible party
 - Issue identification date
 - Date needed by
 - Resolution date
 - Description of resolution

Metrics Allow Project Manager to Monitor and Communicate Project Status

What is a metric ?

- It is planned
- It spans the life of the project
- It is trackable
- It measures variance
- It is understood by the client / project sponsor

The project manager must :

- Choose metrics appropriate to the specific project
- Determine the preferred metrics of the client / project sponsor

Examples of Metrics

- Resource utilization and productivity
- Number of risk events passed or completed
- Number of changes over time
- Earned value
- Tasks starts / finishes (planned vs. actual)
- Milestones achieved

What other metrics can be used ?

Why Consider an Earned Value Method ?

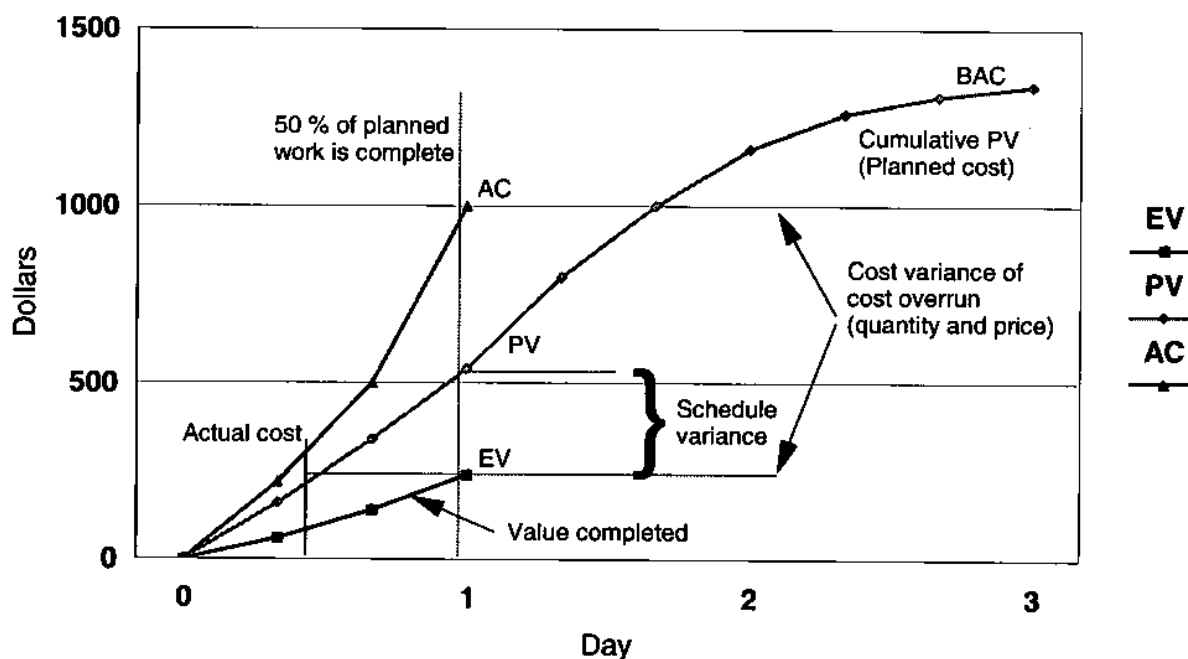
Because it :

- Allows for objective assessment of variance
- Is used and will be used more widely at IBM
- Allows for common understanding of the amount of work that actually has been done on the project
- Is incorporated in all the major modern project management software packages
- Is consistent for all project managers
- Allows for point-in-time analysis
- Allows for forecast of future performance
- Can be done at the work element, summary, or project level

Earned Value Terminology

- What is the planned cost ?
 - Planned Value (PV) or *Budgeted cost of work scheduled (BCWS)*
- How much has been accomplished against plan ? How much will you claim for the work performed and verified ?
 - Earned Value (EV) or *Budgeted cost of work performed (BCWP)*
- How much has been spent against plan ?
 - Actual Cost (AC) or *Actual cost of work performed (ACWP)*
- How much will it take to finish ?
 - Estimate to complete (ETC)
- What will it cost when it is done ?
 - Estimate at completion (EAC)
- What is the baseline cost of the project ?
 - Budget at completion (BAC)

Earned Value Basics



Earned Value Example

PC Installation

- You need to install 20 PCs in one week
- Your labor costs are \$800 per day, so your budget at completion is \$4000
- The hardware is not part of your cost
- Your schedule says that you will install 4 PCs per day
- Allocating costs against your WBS, one PC installation should cost \$200

At the end of day 2, you have labor costs of \$1600. You must pay labor costs, so your actual cost (AC) is \$1600. However, you expected to have installed 8 PCs, but one of the workers is slow, so you have only installed 6 PCs. The planned value (PV) or budgeted cost of work schedule (BCWS) is \$ 1600, but the work actually accomplished, the earned value (EV) or budgeted cost of work performed (BCWP) is \$1200.

You decide you must become current on work performed, so you ask your team to work overtime on day 3. They do, adding 1/2 day's cost, or \$400, to the actuals for day 3. Now your PV is \$2400, and so is your EV, so you are back on schedule, but your AC is \$2800 and you have a cost overrun of \$400, with only 2 days left to do anything about it.

Earned Value Example

- Status by day (cumulative):
 - ▶ AC is tracked (actual costs)
 - ▶ EV is computed (based on work performed)

Day	Total PCs Plan	Total PCs Inst.	PV	AC	EV
0	0	0	0	0	0
1	4	4	800	800	800
2	8	6	1600	1600	1200
3	12	12	2400	2800	2400

Current Status Measurements

Schedule variance (SV)

- What's the difference between the value of what we really accomplished and what was schedule to be done ?

$$SV = EV - PV$$

Cost variance (CV)

- What's the difference between the value of what we really accomplished and what we spent to do it ?

$$CV = EV - AC$$

Percent complete (% complete)

- Real value of work accomplished
% complete = EV / BAC

Percent spent (% spent)

- Percentage of actual cost spent
% spent = AC / BAC

Earned Value Forecasting

$$SPI = \frac{EV}{PV}$$

Schedule
performance index

$$CPI = \frac{EV}{AC}$$

Cost
performance index

budget

$$EAC = \frac{BAC}{CPI}$$

Estimate
at completion

$$ETC = EAC - AC$$

Estimate
to complete

Example: Progress Tracking (Part 1)

At the end of day 2,

Schedule Performance Index:

$$SPI = EV / VP = 1200 / 1600 = 0,75$$

Cost Performance Index:

$$CPI = EV / AC = 1200 / 1600 = 0,75$$

Schedule Variance (SV):

$$SV = EV - PV = 1200 - 1600 = -400$$

Cost Variance (CV):

$$CV = EV - AC = 1200 - 2400 = -400$$

Example: Progress Tracking (Part 2)

At the end of day 3,

Schedule Performance Index:

$$SPI = EV / PV = 2400 / 2400 = 1,0$$

Cost Performance Index:

$$CPI = EV / AC = 2400 / 2800 = 0,86$$

Schedule Variance (SV):

$$SV = EV - PV = 2400 - 2400 = 0$$

Cost Variance (CV):

$$CV = EV - AC = 2400 - 2800 = -400$$

Example: Progress Tracking (Part 3)

At the end of day 3,

To Complete Performance Index

$$\begin{aligned} \text{TCPI} &= (\text{BAC} - \text{EV}) / (\text{BAC} - \text{AC}) = \\ &= (4000 - 2400) / (4000 - 2800) = \\ &= 1600 / 1200 = 1,3 \end{aligned}$$

Key Messages for Module 9

- Keep the overall project in mind as you look for points of trouble
- Include monitoring of risk, change and issues in activities
- Manage relationships with all stakeholders
- Choose appropriate metric to communicate with stakeholders
- Use baselines to measure and control project progress
- Use earned value as a strategy and a technique to identify project problems



Basic Concepts of Project Management

Module IX Team Exercise: Calculating Earned Value

Page 1

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11



Module IX - Team Exercise Calculating Earned Value

Instructions

Complete the
Acme Supernova
Project Assignment



Module IX - Team Exercise

Calculating Earned Value

Instructions

It is now 09 April, 1995. You have just received the latest earned value data from the Supernova project office. The office is expecting you to interpret this mass of data. Your job is to develop a status report using earned value, issues, risks, changes, action items, and recovery plans.

To impress your boss you plan to calculate:

CV

SV

Percentage spent

Percentage complete

EAC

ETC

...your boss expects a complete report in 30 minutes.....

Basic Concepts of Project Management

Module X: Project Reviews and Troubled Projects

Objectives

At the end of this module, you should be able to discuss the following:

- Independent reviews
- Troubled projects

Independent Reviews

- Independent reviews are opportunities to have experts outside of the project team walk through (go over each and every detail) of the results of project activities.
 - Provide high quality proposal documents
 - Solution is technically feasible and will fulfill customer requirements
 - Estimates and schedules are complete and reasonable
 - Risks are identified, assessed and containment plans in place
 - Provide an objective assessment of the health of the project (status, issues, risks)
 - Highlight project accomplishments
 - Identify project-related problems
 - Provide general project management guidance
 - Provide feedback to improve the business (i.e. lessons learned)
- Should be execute:
 - On a regular basis
 - Whenever the project manager changes

In Reviews, The Key Question Is "Where Are You ?"

You must answer the following questions:

- Where should the project be ?
- How much has been done ?
- How much has it cost ?
- How much will it take to finish ?
- What will it cost when it is done ?

In Reviews, The Key Question Is "Where Are You ?"

You must answer the following questions:

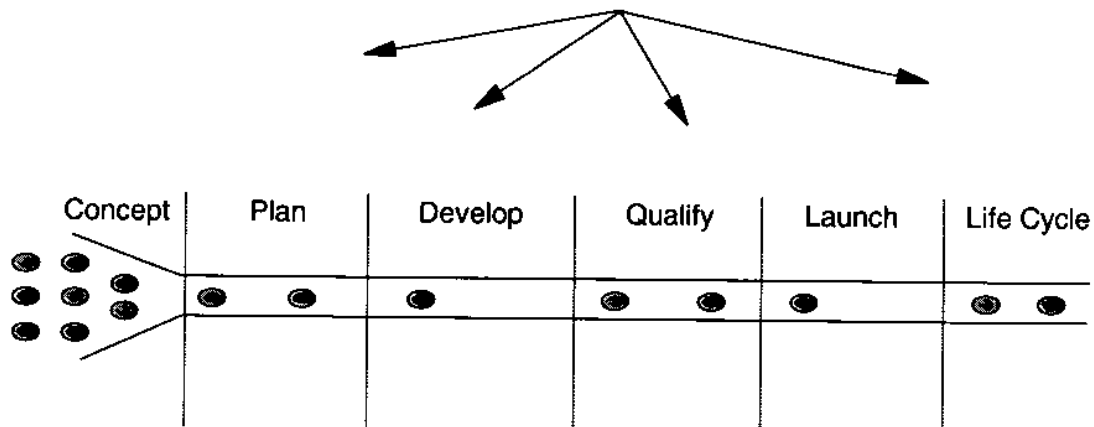
- Where should the project be ? *Planned Value*
- How much has been done ? *Earned Value*
- How much has it cost ? *Actual Cost*
- How much will it take to finish ? *Estimate to Complete*
- What will it cost when it is done ? *Estimate at Completion*

Independent Reviews Tasks

- Review project documentation - especially the Project Control Book (PCB)
- Review cost data
- Review schedule data
- Review risk management plan
- Review change control log
- Review results of previous Quality Assurance review(s)
- Assess contract health
- Interview selected team members and the client / project sponsor
- Analyze the information collected
- Prepare a report of findings and recommendations

Independent reviews are NOT audits

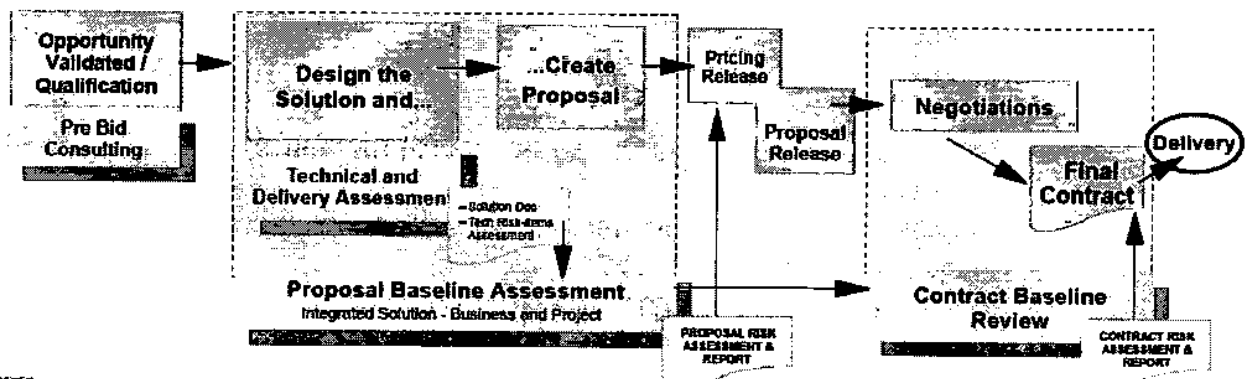
Reviews in IPD



Decision Checkpoints (DCPs) are structured project reviews with specific entry and exit criteria used to measure progress of a project.

WW Quality Assurance Process (Solution Design)

Solution Design



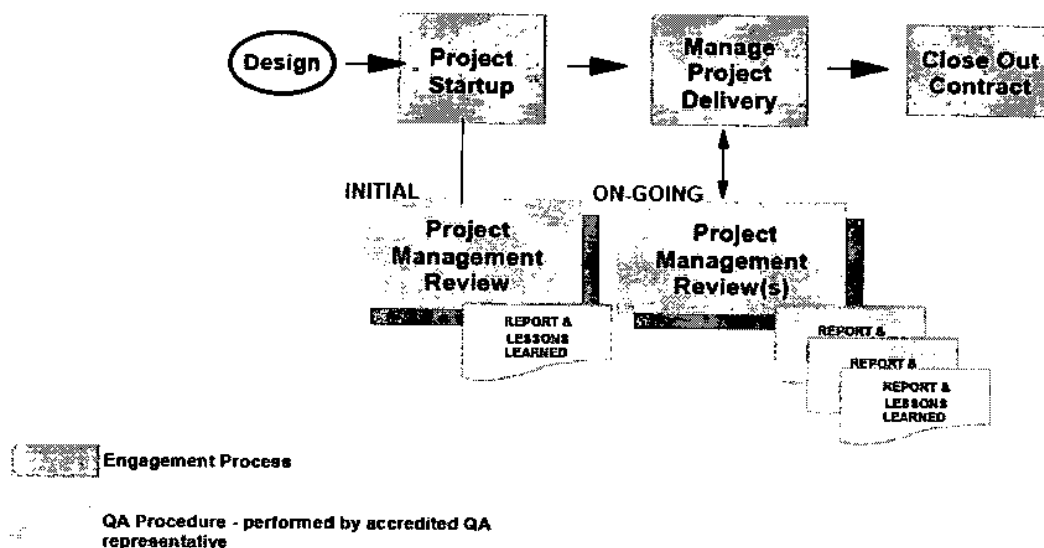
Engagement Process

QA Procedure - performed by Subject Matter Experts

QA Procedure - performed by accredited QA representative

WW Quality Assurance Process (Solution Delivery)

Solution Delivery



QA during Opportunity Qualification:

Pre-bid Consulting

Utilizes Quality Assurance industry / competency skills and experiences along with available intellectual capital, e.g. lessons learned analyses, to

- assist the opportunity team in driving a winning strategy
- reduce, contain, and mitigate risks early in the engagement process
- enable a streamlined and tailored Quality Assurance process approach

Answers the Key Questions: How can we win and is it worth winning?

Business Benefit: A strengthened win strategy

QA during Solution Design:

Technical and Delivery Assessment

Provides a review of the technical aspects of the solution to ensure that the proposed solution will fulfill customer requirements, is technically viable and can be delivered by IBM

- the estimates and schedules are complete and reasonable
- the technical risks are identified, assessed and containment plans are in place

There are three components to this assessment:

- technical Assurance for the various components
- a review of the overall solution
- commitment by the delivery organization(s) to perform the work

Answers the Key Questions: Can we deliver the proposed solution?

Business Benefit: Mitigation of two primary root causes of a troubled project: Inaccurate estimates and Infeasible solutions

QA during Solution Design:

Proposal Baseline Assessment

Teaming of Quality Assurance and the engagement team to reduce, contain and mitigate risk. The work effort is continuous while designing the solution and it is scalable based upon the complexity of the proposal. It provides an assessment of the overall solution and the documented proposal to validate that:

- the solution is designed to satisfy both IBM's and the customer's objectives
- the estimates, schedules, and cost case are complete and reasonable
- delivery responsibilities are clearly defined among all parties involved
- the technical, business, and project risks are identified, assessed, and containment plans are in place

Answers the Key Questions: Should we propose the solution?

Business Benefit: Scalability allows for speed-to-market

QA during Solution Design:

Contract Baseline Review

Provides a review and risk assessment of the changes made during negotiations and after the Proposal Baseline Assessment. The Contract Baseline Review is required primarily for larger and more complex opportunities that have had changes made during negotiations.

Answers the Key Questions: How well can we deliver the solution?

Business Benefit: Provides additional information to management and the delivery team about risk and the recommended actions to assist the project team during delivery

QA during Solution Delivery:

Project Management Review

Provides an independent and objective assessment of the status of the project, issues, financial position, and risks. Frequency of reviews are based upon complexity and project "health". Verification is made to see if the project is:

- being managed in accordance with the contractual commitment and project plan
- meeting planned profitability
- satisfying the customer's requirements and expectations

Answers the Key Questions: How well are we doing against the contract, plans, and customer expectations?

Business Benefit: Assist the project team in delivering a successful solution and increasing customer loyalty

Trouble Projects

- **A project is considered "Trouble Project" when:**

- ▶ The project has significant problems that require the application of corrective plans.
 - For example - The probability exists of exceeding the estimates and / or the budgets or the client's is very dissatisfied and there is financial exposure to lost Revenue unless direct managerial action is taken to put to the project back under control
- ▶ Bigger problems exist with a definitive serious financial exposure, political exposure, loss of support for an IBM Program solution or product, subcontractor exposure, and / or significant clients' dissatisfaction (many time provided to IBM in Writing).
- ▶ The project has financial problems where 25% or more contingency on the project has been used , or the contract is experiencing a 10% or more less GP than was planned for the project. The project can be on schedule but have this issue and will be considered "Troubled Financially" and will be put under this process to try and address the financial issues.
- ▶ *Project that has received a "C" or "D" classification during a PMR = Trouble Project*

Troubled Projects, Root Causes, White Paper

The "White Paper"

The White Paper is a Global Services Document, yet the lessons are universal.

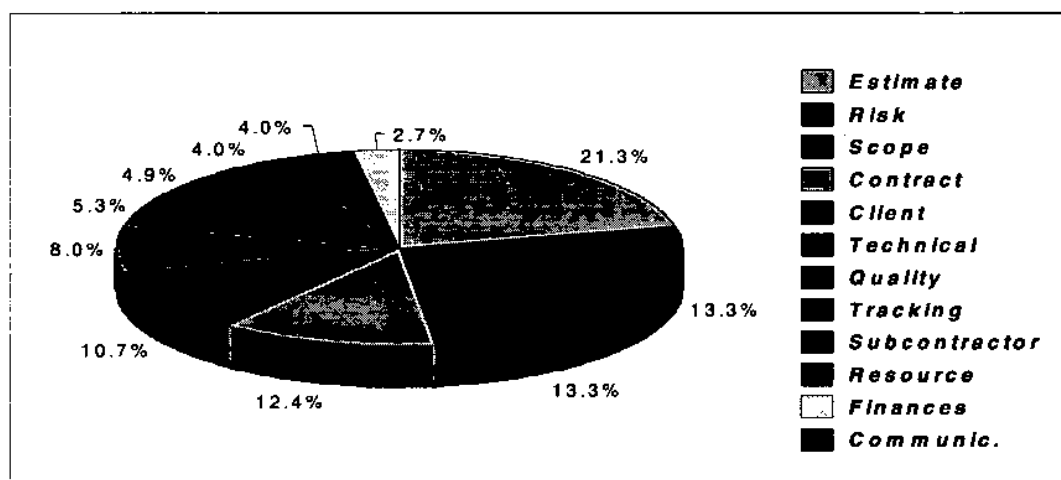
- The paper is based on findings of Project Management Reviews and on analysis of Troubled Projects

Given all that is known about troubled projects, why do projects still fail ?

Why the projects fail ?

- 48% of QA PMR findings on troubled contracts in delivery are issues that originated during the marketing/engagement cycle. The clearly predominant finding is "Expectation Mismatch", i.e., customer expectations that are different from those being delivered under the IBM contract. Usually, these are expectations set during the proposal phase, sometimes verbally (versus what was in either the proposal or the contract). The next most prevalent finding are "Inaccurate Estimates" (project cost estimating done during Solution Design / Proposal Development), and "Unclear Requirements", i.e., the customer's true requirements were not fully addressed by the IBM scope of work contracted.
- 52% of QA PMR findings are issues related the way we are delivering the solution. The overwhelmingly prevalent finding related to contract delivery is lack of fundamental project management discipline, including no project planning/tracking, no change control, no risk management and poor project organization.

Trouble Projects Root Causes



Analysis of root causes based on a trouble project sample.

Root Causes categories

■ Root Causes categories

► Solution Design

- Customer Expectations
- Planning / Estimating
- Requirements Issues
- SOW / DOW Issues
- QA Violations

Statement of Work
↓
Downward of Understanding

► Solution Delivery

- Project Management
- Resource Issues
- Customer Issues
- Subcontractor Issues
- Internal IBM Issues
- No signed Contract

Root Causes from Solution Design

■ Customer Expectations

- Failure to set and manage customer expectations
- Multiple contracts / work orders perceived as one

■ Planning / Estimating

- Fixed-price contracts for combined phases
- Concessions during negotiations with no price increase
- Failure to adhere to published pricing guidelines
- Inaccurate project estimates
- Failure to plan for risk containment
- Lack of transition plan from marketing to delivery
- Inaccurate staffing plans
- Insufficient test plans
- Failure to properly use an approved IBM methodology (i.e., GS Method, WWPM, etc.)
- Failure to properly use intellectual capital from previous engagement(s)
- Customer transaction volumes lower than estimated

Root Causes from Solution Design (cont.)

■ Requirements Issues

- ▶ Failure to reach common understanding of requirements or completion criteria
- ▶ Failure to reach understanding of the proposed solution
- ▶ Failure to establish appropriate contractual baseline

■ SOW / DOU Issues

- ▶ Poorly constructed or unauthorized subcontractor SOWs
- ▶ Penalty clauses in SOW
- ▶ Poor quality Proposals and / or SOWs
- ▶ Lack of DOU with other IBM organization(s)

■ QA Violations

- ▶ Failure to perform QA reviews during Solution Design

Root Causes from Solution Delivery

■ Project Management

- ▶ Ineffective project startup
- ▶ Unclear / ineffective project organization
- ▶ Lack of or inadequate project management discipline
- ▶ Failure to perform QA reviews during Solution Delivery
- ▶ Lack of management oversight / support
- ▶ Failure to implement / exercise proper change management process
- ▶ Starting a phase prior to completing a preceding phase
- ▶ Continuous / constant change in scope
- ▶ Lack of engagement hand-off plan / meeting (SO)
- ▶ Ineffective / insufficient financial management
- ▶ Ineffective communications
- ▶ Ineffective staffing plans
- ▶ Insufficient testing

Root Causes from Solution Delivery (*cont.*)

- **Project Management (cont.)**

- ▶ Poor customer satisfaction
- ▶ Lack of or inadequate project management plan / schedule
- ▶ Inadequate follow-up on action plans from prior review(s)
- ▶ Not properly using approved IBM methodology (i.e., GS Method, WWPPM, etc.)
- ▶ Lack of or inadequate risk management plan
- ▶ Lack of or inadequate plan to submit and / or reuse intellectual capital

- **Resource Issues**

- ▶ Inability to acquire properly skilled resources
- ▶ Unplanned turnover of key project team members.

Root Causes from Solution Delivery (*cont.*)

- **Customer Issues**

- ▶ Unfulfilled customer responsibilities
- ▶ Customer unprepared to support the new system
- ▶ Customer represented by Third Party
- ▶ Change in customer management team
- ▶ Ineffective relationship between IBM and customer
- ▶ Customer having financial problems

- **Subcontractor Issues**

- ▶ Unfulfilled subcontractor responsibilities
- ▶ Ineffective relationship between IBM and subcontractor
- ▶ Subcontractor cost overruns

Root Causes from Solution Delivery (*cont.*)

- **Internal IBM Issues**

- ▶ Problems with OEM or IBM products
- ▶ Technology / architecture issues
- ▶ Failure of IBM to fulfill responsibilities with customer or other IBM organization(s)
- ▶ IBM project team morale or organizational issues
- ▶ Ineffective relationship between IBM organizations
- ▶ IBM / Third Party alliance issues
- ▶ Multisite development issues
- ▶ Offshore development issues

- **No Signed Contract**

- ▶ Working without a signed contract or PCA

Seven Keys to Success

- Project health assesment method developed by PriceWaterhouse Cooper (PWC)
- Adopted by WWPMM and IBM worldwide
- Keep sponsors focused on the major issues
 - ▶ It's a "universal yardstick" to measure projects
 - ▶ Use as an executive mgt communication technique
 - Helps establish a consisten agenda for meetings
 - Helps prioritize issues
 - Anticipates problems
 - Sets action plans in advance

Applying the Seven Keys

Key and Criteria	Noted Issues	Heads Up Display	Proposed Actions
Stakeholders are committed		Red Yellow	
Business Benefits are being realized		Red Yellow	
Work and Schedule are predictable		Red Yellow	
Scope is Realistic and Managed		Red Yellow	
Team is High Performing		Red Yellow	
Risks are being mitigated		Red Yellow	
Delivery Organization Benefits are being realized		Red Yellow	

Key Messages for Module 10

In this module, you did the following:

- Discussed independent reviews
- Discussed the Troubled Projects White Paper and applied project management principles in formulating solutions to issue management, change control, and inadequate project management issues.
- Apply the seven keys assesment to the Olympics Case Study



IBM GLOBAL SERVICES WW QA Process

Prevention Measures to Avoid Troubled Projects

Prepared by
IBM Global Services
Quality Assurance

March 15, 2004

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Information About This Document

Summary of Changes:

Revision Number	Date	Summary of Changes
	2Mar2000	First edition. Author: Chuck Andrews
2.0	25Nov2002	Version 2. Author: Allen Grussing Expanded list of root causes from original 26 to current list of 61. Also organized them into the current root cause categories for Solution Design and Solution Delivery as described in the Introduction. The work contained in this version is based on the collaborative input from the WWQA Knowledge Management team.
3.0	15Mar2004	V.3 updated to reflect changes to WW QA Process and terminology.

Approvals:

The following must review and approve any changes:

Name	Function / Title	Lotus Notes ID
Allen Grussing	WWQA Knowledge Management Program Manager	Allen Grussing/White Plains/IBM

Document Location:

This document is maintained by Allen Grussing/White Plains/IBM.

Document Distribution:

This document has been made available to IBM Global Services' professionals via the Worldwide Quality Assurance database, which can be accessed from the IBM intranet at: <http://w3.ibm.com/services/qa>

Introduction

Troubled projects have a significant impact on IBM's profitability as well as a far reaching negative impact on IBM's reputation for high customer satisfaction and quality service. There are several things that can be done to prevent a troubled project, but one of the best ways to avoid a troubled project early on is for proposal and project teams to understand and follow IBM's Worldwide Quality Assurance Process. Available documentation supporting the implementation of the WW QA Process as well as links to other relevant databases can be obtained from the WW Quality Assurance database which can be accessed from the IBM intranet: <http://w3.ibm.com/services/qa>. Quality Assurance staffs are available to help proposal and project teams understand the process as well as help identify risks and develop effective containment strategies.

Another way for IBM teams to avoid troubled projects is to understand the root causes that can trigger one and apply the suggested prevention measures when a root cause is identified during the lifecycle of the opportunity. The root causes identified in this document are based on a closed-loop QA lessons learned process that analyzes Project Management Reviews from troubled projects. As a result of this analysis, many lessons have been learned about the most common problems and trends that result in a troubled project. Coupled with each root cause are a set of prevention measures that have been compiled by the Worldwide Quality Assurance Knowledge Management team from their experience and expertise. The prevention measures should be considered as a means to reduce or contain the root causes - and thereby to improve project quality, profitability and customer satisfaction. This list is not intended to be a complete list of problem areas - nor an exhaustive offering of prevention measures. Experience and professional judgment should be applied to unique circumstances when determining the appropriate "measures of prevention" for any particular proposal or project.

To better understand the flow of this document it is important to understand the QA lessons learned process. Project Management Review (PMR) reports are reviewed and analyzed, resulting in a list of the root causes that led to the problems in the project. This list of root causes is then consolidated with the root causes from all troubled projects to look for trends and to rank the root causes by frequency of occurrence.

The fact that the lessons learned / root cause analysis is performed on PMR reports implies that the project is in delivery when the root causes are identified - and that is true. It does not, however, mean that all root causes occur in delivery. In fact, quite the contrary. Many of the root causes identified during the delivery phase are actually the result of actions taken (or not taken) during the design phase. For that reason, the root causes are divided into two major sections: "Root Causes from Solution Design" and "Root Causes from Solution Delivery." Several / many of the root causes under these two categories may sound like the same root cause - and in fact many of them are. The difference is, however, that the root cause in design means that proper action or

planning was not applied when the proposal or contract was being written, while the same root cause in delivery means that it was covered properly in the design phase but was not executed properly after the contract was signed and the project went into delivery. To illustrate this, consider root cause #1208-Insufficient test plans and #5113-Insufficient testing. They may appear to be identical. But #1208 is from the design phase, meaning that we didn't plan for sufficient time and resources to perform testing during the project. #5113 on the other hand, is from the delivery phase, meaning that we didn't actually perform sufficient testing while working on the project. In some situations both root causes may apply - we didn't plan for and didn't execute sufficient testing. In other cases the design side only may apply - we didn't plan for sufficient testing, but we actually performed sufficient testing during delivery (as the result of a PCR or adjustments to the hours by the Project Manager). On other projects, however, the delivery side only may apply - we planned for sufficient testing but just didn't do it.

Beneath the two major sections of Design and Delivery, the individual root causes are grouped into six categories, as follows:

Root Causes from Solution Design

- Customer Expectations
- Planning / Estimating
- Requirements Issues
- SOW / DOU Issues
- QA Violations
- Multinational Issues

Root Causes from Solution Delivery

- Project Management
- Resource Issues
- Customer Issues
- Subcontractor Issues
- Internal IBM Issues
- No Signed Contract

The root causes are each numbered, but the numbering schema has no relationship to the frequency of occurrence. The numbers are merely a four-digit number, with the first digit identifying the phase (1=Design / 5=Delivery), the second digit identifying the group within a phase, and the third / fourth digits simply being a sequential number within the group.

For each root cause, a brief description is included along with suggested prevention measures for each.

The results of the lessons learned / root cause analysis work are available in a couple of different presentations. The first, entitled "Lessons Learned / Root Cause Analyses", works very well in a 45-minute conference call or "lunch & learn" type of setting. The second, entitled "Why Services Projects Fail" can also be given during a conference

call. In addition, it is being converted to a webcast format for online viewing. If you would like more information or to include one of these presentations during a team call or lunch & learn, contact qahelp@Southbury/IBM@IBMUS.

Finally, additional prevention measures for the root causes are always welcome and appreciated. Submit them in a Lotus Note to qahelp@Southbury/IBM@IBMUS.

Root Causes from Solution Design

Customer Expectations

1101. Failure to set and manage customer expectations

Description:

Many problems in services projects stem from IBM's failure to meet customer expectations. IBM has substantial control over setting the appropriate customer expectations if the solution is correctly marketed and effective communications are established. Presentations or verbal comments made during the marketing phase/sales cycle, while seemingly innocent, may be perceived by a customer as a commitment by IBM and set a false expectation or may be used by the customer to leverage concessions from IBM when disputes arise over scope or responsibilities.

Prevention Measures:

- Be careful when setting customer expectations. Be conservative in describing a project and try to "under promise and over deliver" rather than "over promise and under deliver."
- Caution the customer about the challenges of the project.
- Make sure the customer fully understands and agrees with IBM's proposed solution.
- Include experienced services delivery resources early in the discussions with the customer regarding the potential solution.
- Do not underestimate the complexity, cost, and time required to develop and implement the solution.
- Encourage the customer to budget for changes upfront so the customer will have the flexibility to address their changing requirements during the project without seeking additional internal funding.
- Inform the customer of "bad news" as early as possible. Consult with experienced IBM personnel to develop a strategy to "package" the news effectively.
- Communicate with all appropriate levels within the customer organization.
- At the beginning of a project, document with the customer their expectations and priorities. Once the expectations and priorities are established, the project team should list actions which will be taken to meet those expectations.
- When appropriate, get the customer to acknowledge the risks and, if possible, agree to the contingency plan.
- Make sure the customer fully understands the importance of their involvement and responsibilities in the project. The customer's full involvement and commitment are essential to the success of a project. The customer should think of themselves as part of a team rather than spectators. The IBM/customer team will either succeed together or fail together.

- Conduct a formal hand-off between marketing and delivery. This should be planned during the Contract Baseline Review.
- The PM or PE should review the scope with the customer before implementation and include the customer in scope planning to identify discrepancies early (i.e., have the customer assist with the work breakdown structure).
- Conduct fully facilitated Joint Application Requirements (JAR) and Joint Application Development (JAD) sessions, obtaining customer agreement and signoff at the completion of each activity.

1102. Multiple contracts / work orders perceived as one

Description:

IBM often has multiple contracts / projects open with a single customer at a given time. Unfortunately the customer doesn't always see these as distinct and separate contracts but perceives them as one big contract. Consequently, if one project becomes troubled and has problems - the customer perceives that all projects are troubled.

Prevention Measures:

- Set customer expectations early in the implementation phase.
- During initial meetings with the customer at contract startup time it should be made clear that the effort is standalone and does not have any connection to other efforts currently being implemented by IBM.
- Clearly identify and classify all IBM contracts and existing work orders associated with the respective customer account. Determine which contracts or work orders, if any, will or could have a direct impact on your project or contract and classify these as Dependencies. These should be a part of a Dependency management plan. Clearly communicate and document these differences to the customer.
- The Project Executive should report on each contract separately during the monthly meeting and other occasions. Each contract should have an identifiable, unique name.
- Create individual contract billing.
- If multiple contracts are needed, and dependencies exist, then C&N should be involved in negotiations early and the PM should be well aware of how to manage the dependencies.
- If "multiple" PMs exist, then a DOU between them should be agreed upon and a communication plan must be established.

Planning / Estimating

1201. Fixed-price contracts for combined phases

Description:

A fixed-price contract for a multiphase project may be a profitable way to structure a deal when IBM has a significant amount of successful experience with the development / implementation of a particular solution or offering. However, in cases where we do not have sufficient experience, the project may be underestimated in terms of both cost and schedule. This is especially true when the fixed price covers future phases for which the requirements are not fully understood or documented, or when the input for a future phase is dependent on the deliverables from a prior phase. Unless the scope of an engagement is defined in detail with very accurate estimates (by an experienced project team), the chances that a fixed-price multiphase project will complete on-time and within budget are slim. Factors which make fixed-price contracts undesirable include:

- lack of project team relevant experience;
- untested components in new environment;
- lack of detailed specifications to guide development;
- unanticipated technical glitches;
- multiphase projects which include requirements, design and implementation;
- built-in conflict of interests (i.e. desire for provider to limit efforts and customer to expand scope under a fixed-price contract); and
- not fully understanding the customer's requirements.

Prevention Measures:

- Limit fixed-price engagements to:
 - short, relatively simple projects or phases, or
 - projects that have been done successfully before by the project team.
- Large projects should be broken into logical phases with each phase bid separately.
- For large projects with no detailed design specifications, IBM should bid only the requirements validation and solution design phases (preferably time and materials).
- Marketing efforts should be focused on level-of-effort contracts where the customer pays for the work they receive.
- If the customer requires an estimate for the entire project, a budget & planning or indicative price should be presented to the customer. These are non-binding estimates used for planning and budgeting purposes.
- Structure the deal to put limits on the level of effort that will be devoted to certain specified tasks. If more effort is required, change control is used to obtain more customer funding. (NOTE: This requires tracking and reporting to the customer the hours used on the specified level of effort tasks.)
- If fixed price is a customer requirement or the only option, consider a pilot phase at a fixed price that will enable better estimates to be made for the full scope.

- The SOW should have an assumption which states that IBM will validate the estimates at the completion of each phase and use the PCR process to document changes in scope, price, and schedule. If we have bound our original estimate with enough specificity, we should be in a position to effectively implement change control.
- During the engagement phase, it becomes very obvious whether the initial requirements provided by the customer are detailed enough to make a reasonable estimate. In most cases, additional clarification is required. If this is the case, a two Phase approach should be presented to the customer, Phase 1 for refining and further clarifying the requirements and bounding the overall scope, Phase 2 for the implementation based on the resultant output of Phase 1.

1202. Concessions during negotiations with no price increase

Description:

Acceptance of additional terms and conditions or increasing scope and/or responsibilities during contract negotiations without increasing the price often causes a project to be unprofitable or less profitable than projected.

Prevention Measures:

- Involve IBM management, Contracts & Negotiations, Legal, Quality Assurance, and/or Pricing in the negotiation strategy sessions as needed.
- Make it clear that IBM wants the business and is willing to negotiate a reduced scope in order to reduce the price, but also make it clear that IBM will not accept terms that make the deal unprofitable.
- In the event that work must begin before the contract is finalized, ensure that all appropriate levels of IBM management are in agreement with the decision, that it is a calculated decision, and that an appropriate Letter of Authorization has been signed. It is important to understand that IBM loses a great deal of negotiating leverage when it begins a project before the contract has been signed.
- The PE/PM responsible for the delivery of the proposed solution must be a key participant and have final approval/disapproval of the proposed concessions.

1203. Failure to adhere to published pricing guidelines

Description:

During the marketing phase, IBM associates often underprice or "low-ball" the price in order to "get our foot in the customer's door." The plan in these cases is to make up the profit on a future phase or project. As a result of underpricing, projects are under financial pressure from the beginning and even minor overruns cannot be easily accommodated. Do not expect customer flexibility or sympathy in cases where IBM has underpriced a project. Customers often do not care or appreciate the fact that IBM is losing money on a particular project. They often believe IBM will make it up in some other way or on some other

account. Additionally, customers are generally unwilling to accept higher prices on later phases or projects once they have been given a lower price.

Prevention Measures:

- Follow authorized pricing methodology and guidelines.
- Obtain approval of authorized pricer. This is required when the estimated gross profit falls below the minimum allowed gross profit.
- Obtain formal Quality Assurance approval of the proposal via the Proposal Baseline Assessment.
- Do not reduce estimates simply to lower price. Reduce actual scope to reduce price.
- Document the business case to support any pricing guideline deviations.
- Obtain approvals from line management and Pricing for any pricing deviations.

1204. Inaccurate project estimates

Description:

Many projects have been financially doomed from the beginning as a result of underestimating the effort required to complete a project. Although Quality Assurance helps provide a certain level of validation, utilizing independent technical resources to validate the estimates is key to reducing the risk of underestimating the project effort.

Prevention Measures:

- Utilize experienced project team members to develop or validate the estimates either during proposal preparation or at contract start.
- Technical & Delivery Assessments, in addition to Proposal Baseline Assessments and Contract Baseline Reviews, should be conducted to validate estimates and schedules. Experienced staff should review estimates during technical reviews.
- Use the most appropriate estimating tools available.
- Make adjustments for:
 - the learning curve of new development tools and methodologies,
 - systems management efforts,
 - untested hardware and software components,
 - subcontractor underestimates,
 - adequate testing and correction periods, and
 - unknown risks.
- Review Intellectual Capital for similar completed contracts for actual costs.
- Include Subject Matter Experts and Project Managers for a bottom-up, or task level, estimate of hours.
- Price to win, but not to a price point. Ensure that the appropriate skills have been identified and are available for the engagement. Too often our staffing and associated pricing is done to meet a perceived customer price point by

manipulating "Band Levels" and ignoring the skills required to implement the solution.

- Use viable historical data whenever possible when estimating projects where we have previously implemented a similar solution.

1205. Failure to plan for risk containment

Description:

All projects involve some risks. The risks should be understood and planned for prior to beginning a project. Both technical and business risks should be addressed. Many risks can be avoided or reduced once they have been identified. By effectively mitigating the identified risks during the design phase, the overall contingency and thus price to the customer can be reduced.

Prevention Measures:

- Use **GS Risk** (the Global Services Risk Assessment tool) to help identify risk areas and develop containment actions and strategies. **GS Risk** can be downloaded from the PM Tool Suite Web Site at http://w3-3.ibm.com/transform/project/pmtoolsuite/?gsrisk_ov.shtml
- Utilize Quality Assurance reviews to identify risks and develop containment actions and strategies.
- Create a Risk Management Plan during the proposal preparation stage. Develop a Risk Management Plan to eliminate, reduce or contain the risks. Review the plan with Quality Assurance and management to ensure that it covers the major risks and has appropriate plans to contain them.
- Maintain/update the Risk Management Plan throughout the life of the project.
- Conduct a Contract Baseline Review to ensure that the risks identified during proposal development have been addressed by the project team and actions are being taken to address those risks.

1206. Lack of transition plan from marketing to delivery

Description:

Unless a sound transition from the proposal team to the perform team takes place, much information may be lost or misunderstood with regard to the project background and customer expectations.

Prevention Measures:

- Ensure that project delivery personnel are involved during the marketing process and that marketing personnel are accountable and responsible for proper transition to the delivery team.
- For large or complex projects, conduct the initial Project Management Review, as required per the WW QA Process.
- Upon contract award, schedule a formal transition meeting between the marketing team and the delivery team. The agenda should include:
 - Customer organization & personalities
 - Customer expectations

- Alignment of expectations with the SOW
- Review verbal commitments

1207. Inaccurate staffing plans

Description:

During the proposal development phase plans, skills, resources, and number of hours for each task are created. In many situations the skills thought necessary on a project do not actually match the skills required to deliver the project. For example, the staffing plan calls for DB2 programmers when in reality it was C++ programmers that were needed. This would also include a poor estimate of when specific skills are required to join and/or leave the project team. In other words, we may have correctly estimated the correct skill needed and we may have correctly estimated the number of hours needed, but we planned to have them on the project during the month of January and we really needed them during the month of April.

Prevention Measures:

- Use Subject Matter Experts and Project Managers to validate estimates and scope.
- The responsible PE/PM for delivery of the solution must be involved and signoff on the staffing plans.

1208. Insufficient test plans

Description:

For many projects, time for testing is required. All too often, the time allocated for testing is insufficient and/or doesn't allow for time to do follow-on testing when the first set of testing points out problems that must be addressed.

Prevention Measures:

- Include a Pilot or Testing Phase in the SOW and include provision for subsequent Pilot/Test period as appropriate.
- Include resource hours for the Pilot/Test phase in the pricing.
- Include the Pilot/Test phase in the project plan and share with the customer such that schedule expectations are set.
- Re-baseline the schedule with the customer and IBM team.
- Have the necessary subject matter experts (SMEs) conduct a technical review of the Test Plan to ensure that enough time has been allocated to effectively test and regression test the solution.
- The use of GSMethod or other such methodologies should aid in defining the appropriate Test Plans.
- Check the IC AssetWeb for Test Plans from similar projects that can be used as the baseline for the development of your project specific plan.
- A test manager or test expert should be involved during the engagement phase to validate the viability of the proposed testing plans and schedules.

During Delivery a test manager / expert must be assigned as a member of the project team. This testing resource must be factored into the cost case.

1209. Failure to properly use an approved IBM methodology (I.e., GS Method, WWPMM, etc.)

Description:

IBM has developed methodologies that are intended to help improve quality, reduce cost, and ultimately improve profitability. These methodologies include intellectual capital, work products, and templates designed to reduce the amount of time necessary for project team members to deliver a project. When these methodologies are not used we are beginning with a blank piece of paper which results in higher costs and inconsistent project delivery.

Prevention Measures:

- Provide continued education of the project management community on the merits of WWPMM and other applicable methodologies.
- Identify lack of a methodology during Initial Project and Plan PMR.
- Ensure that key members of the project team have the appropriate experience, skills and knowledge to effectively implement and execute the approved IBM methodologies such as WWPMM and GS Method. Ensure that these resources are factored into the staffing plans and cost case during the engagement delivery phase.
- The Project Manager should select an approved methodology prior to the start of the project. This is an essential part of developing the project plan.
- Recommend that a method expert or similar SME work with the team and review the proposal.

1210. Failure to properly use intellectual capital from previous engagement(s)

Description:

IBM has captured a lot of good intellectual capital from projects that have been delivered successfully. This intellectual capital can be very useful in helping a proposal team properly estimate and develop a new Work Breakdown Structure as well as to identify any potential deliverables that might be reused. As a result, the estimate will be more reliable and the profitability can be increased.

Prevention Measures:

- Ensure that the proposal team has searched the ICM Assetweb for intellectual capital from a similar project.

1211. Customer transaction volumes lower than estimated

Description:

This root cause occurs most typically in ITS projects where the project financials are transaction or incident-based, but could occur on projects in other LOBs if priced on a transaction or incident basis. In these cases the project financials

are calculated based on an estimated number of transactions occurring (i.e., installing X workstations, upgrading software on X computers, etc.). By signing the contract, the customer commits to the estimated number of transactions and IBM's planned profitability is calculated on the entire number of estimated transactions occurring. When the customer fails to meet their committed number of transactions, IBM is unable to invoice the customer, and consequently the profitability of the project is impacted.

Prevention Measures:

- Ensure that each instance of the "Transaction" is priced at an agreed to profit margin.
- Use a "Tier" method of pricing. The more transactions the lower the price.
- Do not apportion project management and project administrative time across estimated volumes. Make provision in the SOW for a minimum price for project management and project administration regardless of volume.
- Include minimum quantities in the SOW with penalties if minimum quantities are not realized.
- Include a maximum number of incidents/orders that can occur within a monthly time frame. This will encourage fewer incidents/orders with larger volumes.
- Contracts should have a "baseline evaluation" clause to validate the customer's baseline and adjust the price if the contracted level is not met.

Requirements Issues

1301. Failure to reach common understanding of requirements or completion criteria

Description:

It is not uncommon for IBM's interpretation of the requirements for a project to differ from the customer's interpretation. Requirements are even interpreted differently by different people within the customer's organization. Because of the potential for varying interpretations of requirements and the impact to costs and customer satisfaction as a result of misinterpretations, it is very important that IBM have a clear and common understanding of the customer's requirements. If the contract has already been signed, resolving the misunderstanding often becomes extremely contentious when additional costs or schedule delays are involved. Disagreements as to requirements may often result in customer dissatisfaction. To address customer satisfaction, IBM may be required to deliver a more expensive solution as a result of the misinterpretation of requirements.

Prevention Measures:

- Ensure that appropriately skilled and experienced personnel are involved in the marketing phase and proposal development.
- To avoid misunderstandings between IBM and the customer regarding the requirements, IBM should arrange to have a "walk-through" of the requirements.
- The first phase of the contract could be designed as a requirements validation and solution design phase.
- IBM should try to persuade the customer to allow IBM to validate the requirements and proposed solution with the users even if the RFP process does not specify a validation step.
- During the marketing discussions and in the IBM cover letter and proposal, state that IBM recommends a joint walk-through of the requirements, the Statement of Work and solution description before the contract is signed.
- Include the customer in scope planning sessions to assist with developing the Work Breakdown Structure. Doing so will help in identification of any mismatch in customer expectations.
- Requirements should not just be reviewed by the customer, they should be "approved" through a formal process before the project moves forward. It's better to address misunderstandings in the early stages of the project before the design and development activities begin.
- Conduct fully facilitated Joint Application Requirements and Joint Application Development sessions at the beginning of the project to establish the project baseline and refine the scope of work. The objective is to have the customer signoff on the requirements and design at the completion of these activities, upon which time they are frozen and any changes are subject to change control.

1302. Failure to reach understanding of the proposed solution

Description:

There have been situations where IBM clearly understood the customer's technical requirements, but IBM's solution was not how the customer wanted its requirements met. There are often many different approaches and technical solutions (often with significantly different costs) which meet particular requirements. Some solutions are acceptable to a customer and some are unacceptable to the customer, even though they technically meet the requirements. To avoid costly disputes, the customer should have a clear understanding of IBM's proposed solution and how it meets their requirements. If the contract has already been signed, resolving a misunderstanding often becomes extremely contentious if additional costs or schedule delays are involved.

Prevention Measures:

(These are the same prevention measures as #1301, except the focus is on the solution details rather than the requirements.)

- Ensure that appropriately skilled and experienced personnel are involved in the marketing phase and proposal development.
- To avoid misunderstandings between IBM and the customer regarding IBM's proposed solution, IBM should arrange to have a "walk-through" of the proposed solution.
- The first phase of the contract could be designed as a requirements validation and solution design phase.
- IBM should try to persuade the customer to allow IBM to validate the requirements and proposed solution with the users even if the RFP process does not specify a validation step.
- During the marketing discussions and in the IBM cover letter and proposal, state that IBM recommends a joint walk-through of the requirements, the Statement of Work and solution description before the contract is signed.
- Conduct fully facilitated Joint Application Requirements (JAR) and Joint Application Development (JAD) sessions at the beginning of the project to establish the project baseline and refine the scope of work. The objective is to have the customer signoff on the requirements and design at the completion of these activities, upon which time they are frozen and any changes are subject to change control.

1303. Failure to establish appropriate contractual baseline

Description:

For Systems Integration and Application Development (SI/AD) projects, requirements documents generally serve as a poor contractual baseline. A customer's documented requirements can be addressed with a variety of solutions which involve a variety of costs to deliver. Managing change and scope can be extremely difficult when the customer's requirements serve as the baseline. If the requirements serve as the technical baseline, and IBM discovers that it must develop a different solution than it originally priced, IBM has no basis to go back for a change order if the requirements have not changed. If IBM's

proposed solution serves as the technical baseline and it is decided that a different solution should be implemented, IBM can then issue a change order to cover any additional costs incurred as a result of the new approach. Note, however, that if IBM has failed to describe in detail the solution that was proposed and priced, then IBM has a very weak position to establish whether a different approach is a change to the baseline. Requirements documents for Strategic Outsourcing projects work well as a baseline because IBM wants the option of finding more efficient approaches to meet the customer's processing requirements. To the extent IBM can meet the requirements by using less costly approaches and technology, IBM usually profits.

Prevention Measures:

- For SI/AD projects, avoid using customer requirements documents as the sole contractual baseline. Use IBM's proposed solution description in the SOW or proposal as the baseline upon which change orders will be established.
- Customer requirements documents can be used for Strategic Outsourcing projects without the same risks as SI/AD projects.
- IBM's proposal for SI/AD projects should include a detailed solution description (not just tasks descriptions) which should serve as the baseline until the external design is developed.
- IBM's solution description can be included in the proposal, SOW or referenced as an appendix to the SOW.
- Unless the contract is on a time and materials basis to develop a solution based on a customer requirements document, IBM should, to the extent practical, be very careful in using a requirements document as a contractual baseline for a solution.
- One alternative to using the requirements as a baseline is for IBM's proposal to include a detailed solution description (not just task descriptions) which could serve as the baseline until the external design is developed. The solution description should also cross-reference the requirements so the customer can understand how IBM's proposed solution addresses each requirement. IBM's solution description can be included in the proposal, SOW or referenced as an appendix to the SOW. Once the external design is developed, it (along with any approved change orders) should supersede the solution description as the baseline.
- For RAD development, the scope should be bounded in additional ways such as maximum number of iterations or up to X amount of hours per function.
- If IBM cannot describe the solution in detail at the inception of the contract, a Time and Materials Design Phase should be proposed. When the Design Phase is complete, IBM can then bid on the implementation phase with a clear understanding of the effort required.
- Include all relevant assumptions in the SOW.
- Conduct fully facilitated Joint Application Requirements (JAR) and Joint Application Development (JAD) sessions at the beginning of the project to establish the project baseline and refine the scope of work. The objective is

to have the customer signoff on the requirements and design at the completion of these activities, upon which time they are frozen and any changes are subject to change control.

SOW / DOU Issues

1401. Poorly constructed or unauthorized subcontractor SOWs

Description:

IBM has been left with little leverage when a subcontractor has been selected and committed to the customer before IBM has established an appropriate SOW and contract with the subcontractor. Experienced subcontractors have in some instances "out-negotiated" IBM marketing and delivery personnel who attempted to structure deals without the assistance of experienced IBM contract personnel. As a result, IBM ends up absorbing more costs than were originally intended.

Prevention Measures:

- Follow standard IBM procurement process.
- Ensure IBM procurement and/or contract staffs are involved prior to contacting subcontractor for discussions. Utilize the experience and guidance of the IBM procurement and/or Contracts & Negotiations staffs.
- Contact an IBM Resource Manager to ensure no IBM resources are available to provide the services sought from a subcontractor.
- Determine if the subcontractor is qualified and if they have an existing IBM Subcontractor Agreement in place.
- Make sure the subcontractor thinks you are considering other subcontractors (even if you are not seriously considering others) so the contractor will give you a competitive bid.
- Make sure the subcontractor SOW is mapped to the Customer SOW obligations and assumptions.

1402. Penalty clauses In SOW

Description:

In some situations a customer may request (or insist) that penalty clauses be included in an SOW. This is especially true if the customer's project is time-sensitive and they have concerns that IBM may not be able to complete the project within the required timeframe. Penalty clauses might also be requested by the customer as protection for IBM not meeting any service level agreements (SLAs) that are included in the SOW. These penalty clauses, if exercised, may negatively impact the profitability of the contract. Including penalty clauses doesn't cause the problem, but not understanding or managing them is a problem.

Prevention Measures:

- Avoid using penalty clauses unless absolutely necessary.
- If used, be certain that Legal and/or Contracts & Negotiations have approved them.
- Ensure that the conditions for when a penalty clause can be exercised are clearly defined.

- If penalty clauses are requested, try to negotiate bonus clauses for early completion or above average performance.

1403. Poor quality Proposals and / or SOWs

Description:

One of the main reasons for poor quality proposals is the lack of time allocated to properly write them. Proper proposal preparation is essential to providing a high quality proposal that addresses the customer's needs and protects IBM's interests. Poor quality proposals and SOWs also result from failure to utilize the Quality Assurance reviews to check the quality and content of the bids. In a number of troubled projects, it was discovered that the project team failed to follow the recommendations of the Quality Assurance Reviews. Independent Quality Assurance reviews are of little value if the review recommendations are disregarded. The consequences of a poorly defined or constructed SOW are that the Project Manager has no solid basis to create a project plan and disputes over scope are difficult to reconcile.

Prevention Measures:

- Decline to bid on a project if there is inadequate time to prepare a quality proposal. It is better to decline to bid, than to submit an embarrassing or unprofitable proposal.
- Attend the Services Proposal Development Workshop (N229J), available through IBM Global Campus.
- Conduct a proposal development meeting for the proposal team.
- Consider the development of the proposal as a mini-project. Assign a proposal team leader to manage the proposal development project.
- First create a Work Breakdown Structure (WBS) for the project and then develop the proposal based on the WBS.
- Involve Competency Leaders/specialists in developing the solution.
- Use peer reviews to obtain independent opinion of clarity and completeness.
- Request independent technical reviews to validate the feasibility and ensure that nothing is overlooked or misrepresented.
- Obtain formal Quality Assurance approval per the WW QA Process. Make sure that Quality Assurance has the time to review the final proposal documents that will go to the customer.
- Review proposed SOWs internally with management, Quality Assurance, Finance and Legal as appropriate before they are presented to the customer. Quality Assurance and experienced staff can identify and suggest removal or rewording of parts of a proposal which may have a negative impact to IBM. Once a customer sees something that is beneficial to them in a proposal, it is very difficult to change or remove it.
- Make sure all proposals and SOWs clearly state what is in scope and what is out and include the required SOW components.
- Make sure the Customer SOW is mapped to the Subcontractor SOW obligations and assumptions.

1404. Lack of DOU with other IBM organization(s)

Description:

It is often necessary to use resources from more than one IBM organization during the delivery of a project. When this occurs, one resource is the contract owner and the other organization(s) act in the role of a service provider to the contract owner - almost in a subcontract type of role. It is important to have a Document of Understanding (DOU) between the contract owning organization and each of the service provider organizations to ensure that everyone understands the tasks to be performed, the timeframe that the work is to be performed, how recoveries and expenses will be handled, etc. The DOU becomes the "contract" between IBM organizations in much the same way that a Subcontractor SOW is the contract between IBM and an external subcontractor. Not having a DOU almost always leads to misunderstandings, disagreements, and a breakdown in the internal IBM relationship (see also #5505: Ineffective relationship between IBM organizations).

Prevention Measures:

- Ensure that a DOU is written and agreed to by both parties prior to the start of a contract.
- If the tasks to be performed are dependent upon the service provider organization, the DOU should be agreed to before submitting a proposal to the customer.

QA Violations

1501. Failure to perform QA reviews during Solution Design

Description:

When projects are bid without adequate Quality Assurance reviews, IBM has failed to comply with its own Worldwide Quality Assurance Process. Many potential problems and quality issues are identified through the Quality Assurance Proposal Baseline Assessment. Failure to follow Quality Assurance recommendations is also a common source of project problems.

Prevention Measures:

- Follow the WW QA Process. All proposals should have:
 - a Technical & Delivery Assessment
 - a Proposal Baseline Assessment, and
 - a Contract Baseline Review.
- Quality Assurance staffs are available to help explain the proper steps and procedures which must be followed.
- Ensure that all action items identified by Quality Assurance reviews have been closed to the satisfaction of Quality Assurance. If a recommendation is not followed, the reason for noncompliance should be documented and forwarded to line management and Quality Assurance Management.
- The proposal team should brief its line management on the proposed project and risks identified through the Proposal Baseline Assessment. Informed management concurrence should be obtained to proceed.

Multinational Issues

1601. Failure to properly handle multinational issues

Description:

Many of IBM's large customers are becoming more global. As a result we often find our projects spanning many countries and geographies. There are several ways in which multinational contracts can be written, but in all cases the IBM offices in the countries where work is to be performed must be involved in the development and approval of the proposal. There are many legal, human resource, tax, and other issues that must be considered - and the local country is best suited for addressing these issues.

Prevention Measures:

- Involve Contracts & Negotiations, Finance/Pricing, and/or Legal early in the proposal development cycle.
- Identify each country where work is to be performed and the individuals in those countries that can provide assistance in the development of the proposal.
- Ensure that the DOU with the lead country has been agreed to and signed by all participating countries prior to the start of a contract.

Root Causes from Solution Delivery

Project Management

5101. Ineffective project startup

Description:

Failure of the IBM Project Manager and Customer Project Manager to review the SOW as the appropriate definition of the scope. The customer should also be aware of the project plan and how the customer personnel will be used as a part of the overall project. See also #5102: Unclear / ineffective project organization.

Prevention Measures:

- At the commencement of every project, ensure that the IBM Project Manager reviews the SOW with the Customer Project Manager and obtains full concurrence regarding the tasks, IBM and Customer Responsibilities, deliverables, completion criteria, change control procedures, schedule, project organization and roles, etc.
- If any disagreements occur, ensure that marketing personnel and line management are involved to remedy the disagreement. Ensure that any resulting changes to the SOW are formally incorporated via the change control procedure before the project proceeds.
- Hold a customer kickoff meeting to introduce the customer and IBM team members and stakeholders to each other and to define roles and responsibilities. Use the kickoff meeting to:
 - Define scope (not develop work breakdown)
 - Identify the purpose of the project and expected output
 - Identify potential risks and preliminary plans (hold additional risk management sessions throughout the project)
 - Present immediate plans for the project and describe what each project team member will be doing in the next several days.
- Include the customer in the project planning session(s) to assist with defining the Work Breakdown Structure. Make the project planning session different than the project kickoff meeting.
- Ensure Contract Initiation Services (CIS) is engaged early in the contract or before signing (if imminent). CIS provides the startup expertise required to ensure an effective project start.
- Conduct the initial Project Management Review per the WW QA Process.

5102. Unclear / ineffective project organization

Description:

Projects often begin with confusion as to who does what because the roles and responsibilities are not well defined.

Prevention Measures:

- At the commencement of every project, ensure that the IBM Project Manager reviews the SOW with the Customer Project Manager and obtains full concurrence regarding the tasks, IBM and Customer Responsibilities, deliverables, completion criteria, schedule, project organization and roles, etc.
- If any disagreements occur, ensure that marketing personnel and line management are involved to remedy the disagreement. Ensure that any resulting changes to the SOW are formally incorporated via the change management process before the project proceeds.
- Conduct the initial Project Management Review per the WW QA Process.
- Define the project organization along with the roles and responsibilities of each team member. The customer's staff should also clearly understand their responsibilities.
- Define an escalation process for IBM and the customer as well as ensure there is a management communication plan.
- Establish a joint customer/IBM "steering committee" to facilitate project oversight and decisions.
- Hold a customer kickoff meeting to introduce the customer and IBM team members and stakeholders to each other and to define roles and responsibilities. Use the kickoff meeting to:
 - Define scope (not develop work breakdown)
 - Identify the purpose of the project and expected output
 - Identify potential risks and preliminary plans (hold additional risk management sessions throughout the project)
 - Present immediate plans for the project and describe what each project team member will be doing in the next several days.
- Include the customer in the project planning session(s) to assist with defining the Work Breakdown Structure. Make the project planning session different than the project kickoff meeting.
- Ensure Contract Initiation Services (CIS) is engaged early in the contract or before signing (if imminent). CIS provides the startup expertise required to ensure an effective project start.

5103. Lack of or inadequate project management discipline

Description:

In a number of cases, poor execution of proper project management techniques and processes is the cause of unsuccessful projects. Inexperienced project managers and project teams are sometimes assigned a project which they are not prepared to manage without assistance. In many instances, a skilled project manager is removed from the project cost case in order to reduce the price to the customer. In these situations the project management tasks are generally assigned to another team member who is not skilled in proper project management practices (i.e., architect, developer, etc.). As a result, projects end up being managed inconsistently and, if a change in IBM Project Managers occurs, the transition between them becomes more difficult.

Prevention Measures:

- Follow the IBM Worldwide Project Management Methodology (WWPMM).
- Properly train all project managers and provide close supervision of projects from the beginning.
- In projects where project managers have limited experience or training, an experienced project manager should be assigned to closely review the project plans and ongoing project status.
- For large, complex projects, ensure that a certified project manager has been assigned.
- Do not remove the project management role in order to reduce projects costs. Reduce scope if cost needs to be reduced.
- When the project is initiated, the project manager should request an early Project Management Review to ensure the project is on the right track.
- Implement effective tracking mechanism and tools to track actuals against estimates with revalidation of the estimates to complete activities.
- Assign a skilled project administrator to assist the project manager - especially with the use of project planning and tracking tools.
- The owning Delivery Executive must provide effective management oversight to insure initially that the project management function is adequately staffed with skilled resources and to ensure that the PM methodologies and discipline are being used and executed effectively during delivery.

5104. Failure to perform QA reviews during Solution Delivery

Description:

Project Management Reviews (PMRs) are sometimes not scheduled until the project is in serious trouble. By that time, it is often too late to avoid significant problems. In addition, the Project Manager's failure to follow the advice and action items from the Project Management Review often results in the problems continuing or becoming worse (see also #5116: Inadequate follow-up on action plans from prior reviews).

Prevention Measures:

- Ensure timely Project Management Reviews (PMRs) by independent Quality Assurance staff are held. A PMR schedule should be developed with Quality Assurance at contract execution and adhered to throughout the life of the contract.
- Ensure follow-through on action plans which result from PMRs.

5105. Lack of management oversight / support

Description:

Line Management in some cases does not have a good mechanism to track its respective portfolio of projects and therefore, projects often become troubled before they come to the attention of management. Management assistance is sometimes provided too late.

Prevention Measures:

- Line management in the geographies and industries should ensure that a mechanism is in place to closely track the status of all significant projects.
- A Project Management Review schedule should be developed and tracked in all geographies and industries to identify which projects are not being reviewed as required.
- Close monitoring of troubled projects by line management should be instituted.
- Project Executives and Project Managers should keep their line executives briefed on a frequent basis with regard to the status of all projects. The briefings should include project actuals vs. plan, risk management issues and actions as well as requests for management assistance.
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5106. Failure to implement / exercise proper change management process

Description:

Many well intentioned project teams make changes during a project without the formality of change authorizations. Without these change authorizations, it is often difficult for IBM to defend our actions, intent or baseline when disputes arise over scope or overruns. "Defeat scope creep"

Prevention Measures:

- Ensure the change management process is clearly defined in the SOW.
- Encourage the customer to fund a bucket of hours dedicated for approved changes (and investigative charges). This may be anywhere from 5 to 25% of the contract value depending on the length of the contract and the number of expected changes.
- Stress the importance of adhering to a formal, documented change management process. Following such a process is as much in the customer's interest as it is to IBM.
- During project kickoff, walk through the change management process with the customer team.
- Early in the project use the change management process to authorize a change which has no cost or schedule impact. The customer is much more agreeable to signing a change authorization if it does not cost them anything.

By executing a no-cost change order, you and the customer will have set a precedent as to how changes must be approved.

- Execute the change management process for every change, whether or not there is a change in cost or price. Otherwise "no cost changes" may lead to overall scope creep that will negatively impact the project at a later time.
- Encourage the customer to participate in the change control process through the use of the Project Change Request form.
- Ensure a Project Change Log is put in effect early to track all changes, including those that are rejected.
- Sequentially number all changes for the sake of clarity.

5107. Starting a phase prior to completing a preceding phase

Description:

Starting a phase before a related preceding phase is complete is a risky decision. Much rework may be required as a result of work beginning prematurely. The client may refuse to pay for the rework required. It has been proven time and time again that this tactic does not work.

Prevention Measures:

- Ensure that the Project Manager plans and executes the project in a manner that does not allow a phase (or task) to start before a dependent predecessor phase has been completed.
- Ensure that the Services Delivery Unit Management regularly assesses the status of the project and is aware (by reading status reports and attending status meetings) of any decisions to start a phase before a prior phase has been completed.
- For every Activity or Phase, entry and exit criteria must be documented, identifying the inputs, the outputs, and the validation process for determining if the entry / exit criteria have been met.

5108. Continuous / constant change in scope

Description:

Everyone understands that there will nearly always be changes in scope during the life of a project. And there are usually change management processes in place to address these changes. But in some circumstances the customer makes continuous changes to the scope of a project. Sometimes these requested changes are large and have a significant impact on the project. This usually occurs when the customer doesn't have a clear understanding of what they want, or frequently change their mind about what they want. While changes can be handled through change management, constant change in scope often means rework and frustration for the project team. It can also mean that the project manager is so fully occupied with understanding, documenting and issuing change authorizations that they can't focus on the actual task of managing the project.

Prevention Measures:

- Ensure the scope and requirements are clearly identified and understood by all parties prior to starting work.
- Be sure to incorporate the changes into the Work Breakdown Structure and keep the customer constantly advised of the impact of the changes on the schedule as well as the cost. By doing so, the customer will understand the impact of the excessive changes on the schedule and price.
- Schedule impacts, solution quality and stability impacts should be the main topics of discussion with the customer PM and Executives when trying to address this issue.
- Ensure the contract change management process is enforced for all requested scope changes.
- Include the impact / cost on the total project for each change.
- If changes are too frequent, try to establish a release plan. Create frequent releases which supply function to the customer to prevent the original plan from continuous extensions without deliverables.

5109. Lack of engagement hand-off plan / meeting (SO)

Description:

All projects should have an engagement handoff plan to facilitate transfer of the engagement from sales/marketing (Client Solution Executive) to the account management team (Project Executive and Project Office staff). This is especially true - and CRITICAL - on big SO opportunities where the marketing and negotiations phase can take many, many months. Without an engagement handoff plan, the account management team is often unaware of the final terms and conditions, responsibilities, tasks, deliverables, etc. of the contract and are not prepared to meet the customer's expectations or provide direction to the IBM service providers who will actually deliver the services to the customer.

Prevention Measures:

- Ensure that an engagement hand-off plan is developed and agreed to by IBM sales/marketing and account management.
- Ensure that the engagement hand-off meeting and formal hand-off occurs.
- Review results of QA Contract Baseline Review.
- Ensure the IBM service providers are conducting their Technical Transition Meeting and beginning to prepare the detailed transition plans required to perform technical transition and transformation. Obtain lock-in on Transition cost and completion criteria.
- Ensure IBM HR and Finance are preparing / executing the detailed transition plans required to perform the HR and Financial transition.
- Attempt to involve the Project Executive in the Solution Design phase.
- Attempt to continue the involvement of the Client Solution Executive in the early stages of the Solution Delivery phase.
- Contract Initiation Services (CIS) should be engaged when the contract signing is assured to develop a list of contract deliverables (especially those which are due during the first month after signing.)

5110. Ineffective / insufficient financial management

Description:

One of the many tasks a project manager is responsible for is the financial management of the project. This includes reconciling labor hours, travel and other expenses, customer billings, etc. Failure to properly manage the financials often result in lost revenue or expense recoveries because the project manager is unable to validate the accuracy of customer invoices.

Prevention Measures:

- Validate project financials on a weekly basis and correct errors immediately.
- Validate labor and expenses billed to the customer to ensure accuracy. Correct errors immediately.
- Review invoices with the customer to ensure they understand and are in agreement.
- Validate that all invoices are being paid on a timely basis so that revenue can be realized for the project and an accurate gross profit can be calculated.
- Create a financial baseline that reflects the cost and price as specified in the pricing tool that was used to price the SOW.
- Update the financial baseline with approved Change Authorizations.
- Track the costs and the invoices (revenue) against the baseline.
- System generated invoices may not provide sufficient detail to satisfy the customer's Accounts Payable requirements. Therefore, establish the customer's requirements for the format for invoices at the outset of a project.
- Review the Contract Gross Profit Report, or general ledger report, on a monthly basis to verify that costs and revenues have been appropriately recorded, and were applied under the correct accounting codes.
- The project plans and Work Breakdown Structures should be at the level of detail to facilitate earned value measurements and tracking.

5111. Ineffective communications

Description:

It is critical that project managers have an effective communications plan with the customer, the project team, and IBM management. Troubled projects are often the result of simply having no regular status reporting, customer meetings, project team meetings, etc. In these situations the customer is unaware of the progress being made on a project. Without regular status reporting, the customer is also unaware of issues that may need their involvement and attention. The same can be said for IBM management. Without proper and effective communications, everyone assumes that the project is on schedule, on budget, and progressing as planned. Later, when the project is in trouble, it is too late to start trying to document all of the issues that have contributed to the project's troubled status.

Prevention Measures:

- Develop a communications / escalation plan at the beginning of the project.
- Ensure that regular communications and status reporting occur on a regular basis (as defined in the communications plan) with the customer, project team, and IBM management throughout the life of the project.
- Keep the customer advised of the smallest of delays or improvements in the schedule on a weekly basis. A delay in the schedule should not be undisclosed to the customer on the premise that "it can be made up" without the need for the customer to know.
- Project Governance must be established at the start of the project and documented either in a separate document or as part of the PMP. This establishes the baseline for the majority of the project communications and how the project will be managed on a day to day basis. This also helps reduce some learning curve time as new project members join the team.

5112. Ineffective staffing plans

Description:

It is important that staffing plans be accurate and complete. A well-defined staffing plan enables the project manager to know what skills will be needed on a project and for how long. Without an effective staffing plan, the project manager is often unable to obtain the right skills at the right time.

Prevention Measures:

- Ensure that a staffing plan is developed prior to the start of a project.
- Work with the appropriate Resource Deployment Managers (RDMs) or other staffing personnel to make them aware of what skills will be needed and when.
- Until a project plan can be created, use the estimates that were used in the pricing tool to determine initial resource requirements for the staffing plan. Once the project plan is created, use it to validate and update the resource plan. The project plan will determine not only the number of resources and skills required, but will also indicate when the resources will be required.
- A project should always be staffed with resources that possess the appropriate skills, experience and knowledge to "jump start" the project and ensure successful delivery. Ineffective staffing plans are mainly a direct result of the engagement team trying to staff the project with less expensive / lower band level resources in order to lower the cost.
- Ensure a project plan is developed and used throughout the project life. This will ensure all tasks are staffed and any deficiencies are made visible at the earliest point in time.

5113. Insufficient testing

Description:

Testing is usually included in the project management plan/schedule when appropriate. All too often, however, the amount of time is underestimated or is

reduced in an effort to cut project costs. Testing for rework is often underestimated as well.

Prevention Measures:

- Ensure that subject matter experts participate in the development of the testing estimates.
- Ensure that "superstar" estimating doesn't influence the amount of testing needed. Superstar estimating occurs when a highly skilled expert with many years of experience provides an estimate that can't be achieved by the less experienced practitioners that will be performing the work on the project.
- Assign a Test Manager / Expert to the project.

5114. Poor customer satisfaction

Description:

In some situations the customer often becomes dissatisfied during the life of a project for one reason or another. One might argue that poor customer satisfaction is actually the result of other root causes occurring - and that is true. But in some situations the customer has become dissatisfied with IBM for some other reason and this can result in problems for the project manager and team. Ultimately the project manager has to work with his or her management and the customer to ensure that the customer is satisfied with the work on their project, regardless of the customer's other issues with IBM.

Prevention Measures:

- Ensure the customer is advised of the Issues Management Process that should have been put in place at the beginning of the project and encouraged to use it to document the reasons for their dissatisfaction. In other words, implement the Issues Management Process at the beginning of the project and ensure the customer is aware of the process and encouraged to use it.
- During the implementation of any project, there will be some form of customer satisfaction issue. If the IBM PEs/PMs are doing their jobs effectively and in a disciplined fashion, this will be the case, especially in the areas of change control / scope management, adhering to the established entry and exit criteria, etc. A true measure of customer satisfaction is whether we deliver a quality solution on time, within the projected budget, that meets the customer's requirements.
- Customer dissatisfaction is usually the result of a long term problem, issue or misunderstanding. These causes cannot be fixed overnight. Consider bringing in an outside party, such as Relationship Alignment Solutions, to work with the customer and IBM to understand the root causes and develop solutions.

5115. Lack of or inadequate project management plan / schedule

Description:

A current project management plan/schedule is one of the fundamentals of good project management. Not having a current schedule results in the project manager being unaware of what tasks are due, what work has been completed, what work remains to be done, how many hours have been spent on a task, etc. Failure to maintain a project management schedule nearly always results in a troubled project.

Prevention Measures:

- Ensure that a current project management plan/schedule was developed prior to the start of the project and that it is kept current throughout the life of the project.
- Ensure that the Project Manager has the skills to create a project plan using a project planning tool such as Microsoft Project.
- Ensure that the project has assigned an experienced Project Administrator, preferably a Jr. PM, to assist the PM in the PM plan development, scheduling and tracking. Individuals in this role should have an in-depth knowledge in the use of whatever PM tool will be used on the project.
- A contract which has multiple, related and/or dependent projects and phases requires an additional level of planning. An integrated plan for the entire group is required to ensure any dependencies are met. Customer and subcontractor plans should be included. The integrated plan can be used to manage the project.

5116. Inadequate follow-up on action plans from prior review(s)

Description:

Failure by the Project Manager to follow the advice and action items from the Project Management Review often results in the problems continuing or becoming worse.

Prevention Measures:

- Ensure that an action plan is developed to address the findings and recommendations identified during a Project Management Review.
- Assign each of the action items to the appropriate person for completion and identify a due date for each.
- Monitor the action plan to validate that the action items are being completed.
- Report the status of the action items, as appropriate, between PMRs and prior to the next PMR.
- Make the action plan part of the internal status report to line management and executives, and report the status of the action items in each report.
- The responsible Delivery Exec must provide the management oversight to ensure that the action plans are addressed, providing whatever executive support to the PM is necessary to complete the identified actions.

5117. Not properly using approved IBM methodology (i.e., GS Method, WWPMM, etc.)

Description:

IBM has spent a great deal of time and money developing various methodologies for project management (WWPMM and PMP) and for technical delivery (Global Services Method). These methodologies contain valuable information, work products, templates, etc. designed to help project teams improve efficiency and profitability on a project. Using these methodologies also creates a level of consistency between projects so that project team members are able to move between projects more easily. Not using one of the approved methodologies generally results in a "reinventing the wheel" and "starting from scratch" environment.

Prevention Measures:

- Ensure that one of the approved IBM project management methodologies (WWPMM or PMP) is being used on the project.
- Ensure that Global Services Method is being used as the technical delivery methodology on the project.
- Ensure that key members of the project team have the appropriate experience, skills and knowledge to effectively implement and execute the approved IBM methodologies such as WWPMM and GS Method. Ensure that these resources are factored into the staffing plans and cost case during the engagement delivery phase.

5118. Lack of or inadequate risk management plan

Description:

A risk management plan, including mitigation actions, should be prepared prior to the beginning of the project as part of the proposal development. Once the project is in delivery, the risk management plan should be updated and maintained throughout the life of the engagement. This helps project managers and management be aware of new risks that arise so that they can be closely monitored and managed appropriately. Failure to have a current risk management plan can leave IBM unprepared to address issues in a timely manner.

Prevention Measures:

- Use the GS Risk tool to create a risk management plan during the proposal development cycle.
- Update and maintain the risk management plan throughout the life of the project.
- Include the customer in the risk management sessions where appropriate. Customers are usually far more aware of the types and frequencies of risk that can affect their line of business. This also helps the customer accept their responsibilities as far as risk response.

5119. Lack of or inadequate plan to submit and / or reuse intellectual capital

Description:

The inventory of intellectual capital available to project teams to be used on projects is one of IBM's greatest assets. This inventory, however, is only valuable if it is collected and then reused successfully on future projects. It is important that IBM project teams have a plan to submit new intellectual capital to the ICM Assetweb as part of their project tasks and that they also have a plan to reuse existing intellectual capital in order to reduce development time and cost.

Prevention Measures:

- Maintain / update a plan to submit and reuse intellectual capital during the delivery of every project.

Resource issues

5201. Inability to acquire properly skilled resources

Description:

The IBM Project Manager may spend a considerable amount of unplanned time to locate and acquire the resources needed to perform the project. In some cases these resources cannot be quickly found or end up costing more than the cost case estimated.

Prevention Measures:

- Ensure that Documents of Understanding are in place, as applicable, to formally commit resources prior to committing a bid to the customer.
- Particularly for key planned resources, ensure that appropriate management (Resource Managers) are aware of and committed to the provider responsibilities.
- Review formal staffing plan with a resource manager and line management to ensure that appropriate staffing can be secured.

5202. Unplanned turnover of key project team members.

Description:

As a result of unplanned staff turnover, cost and schedule overruns occur because of delays caused by the time required to locate replacements, actually make them available to work, and bring them up to speed on the specifics of the project.

Prevention Measures:

- Ensure that the IBM Project Manager has a "succession plan" in place for key project team members in the event that they leave the project for personal or business reasons. This plan should include the identification of potential replacements with comparable experience/expertise along with the manner in which a transition of responsibilities from the original person to the replacement might take place.
- Ensure that the IBM Project Manager practices "cross-training" so that in the event a key project team member leaves the project, an existing peer on the project could at least temporarily handle the responsibilities until a permanent replacement is brought in. This can help keep disruption minimized.
- As part of the project Resource Management plan, make sure each team member's roles and responsibilities are defined and updated accordingly. Doing so will make it easier when communicating the need for a replacement from a resource deployment manager.

Customer Issues

5301. Unfulfilled customer responsibilities

Description:

In some cases, the customer does not have the resources, skills, infrastructure or time to support the implementation of IBM's proposed solution. As a result, the project fails behind schedule, IBM may be required to assume customer responsibilities and/or the project may not proceed as planned. Do not assume that just because the SOW clearly states the Customer Responsibilities, that the customer has the skills or resource availability to meet those responsibilities.

Prevention Measures:

- A readiness assessment should be conducted on the customer prior to bidding a significant project. Elements to be assessed should include:
 - executive commitment to the solution;
 - user and management commitment to the solution;
 - adequate funding to cover all internal as well as external costs;
 - internal resource skill level and availability;
 - adequate infrastructure to support the new solution;
 - business process change requirements and adequate time to implement necessary changes; and
 - conflicts with busy seasons which may affect internal resource availability.
- Share the results with the customer and attempt to develop an action plan to address any identified concerns.
- At the commencement of every project, ensure that the IBM Project Manager reviews the SOW with the Customer Project Manager and obtains full concurrence regarding the tasks, IBM and customer responsibilities, deliverables, completion criteria, schedule, project organization and roles, etc.
- Require the customer to report status on its responsibilities to help ensure project stays on track.
- Include the customer in the project planning sessions to help create the Work Breakdown Structure. Here the customer's specific tasks will be identified and it will assist the customer in knowing their responsibilities as well as requiring them to assign resources to tasks. In turn, this will help the customer determine the workload for their resources.
- Create a proposal for IBM or a subcontractor to perform the work for the customer. In some cases this may be enough to make the customer realize the need to take action.
- Propose to charge the customer for IBM time lost due to customer delays.

5302. Customer unprepared to support the new system

Description:

Customers are sometimes resistant to accepting a system if their staff is unable to effectively support it. As a result, they keep IBM on-site to support the new system by delaying acceptance.

Prevention Measures:

- Include the appropriate level of training tasks to enable the customer to support the system in the SOW.
- Include a post implementation support task to keep the system running while the customer's personnel become trained to support the system.
- Include specific completion criteria in the SOW and in the project plan. Maintain customer's focus on the project completion right from the beginning of the project.

5303. Customer represented by Third Party

Description:

Some customers choose to use a third party vendor to negotiate their services contracts. These third parties are given the mission of choosing a vendor to deliver a particular project - usually awarding the contract to the vendor that can deliver the project for the lowest cost. These third parties are also given the responsibility to negotiate terms and conditions of the contract. Unfortunately, the vendors (including IBM) usually don't have any direct contact or involvement with the customer. This makes it extremely difficult to fully understand the requirements that we are being asked to bid on - or to help the customer understand why the value IBM can bring may be worth a higher price than our competitors.

Prevention Measures:

- Determine first if award is based on price alone. If so, be very specific in what is not included in the SOW and document all assumptions in the SOW.
- Be sure not to price in any product or service that is not explicitly required
- Implement Change Management at the first opportunity.
- In the event that IBM is the Prime, request and validate the viability of the third party's detailed project plans and schedules and how they integrate into the overall IBM solution. Highlight and escalate to the customer any issues and areas that require further clarification as to the scope of the third party effort, as soon as possible and seek resolution.
- Contact other proposal leads who have had experience with the third party to develop a plan for addressing the third party's requirements.

5304. Change in customer management team

Description:

Occasionally there are changes in the customer's management team which can impact the success of the project. This usually is the result of the new management wanting to evaluate all open projects and modify their scope to address the business issues that they want to address. It may even mean the termination of a project.

Prevention Measures:

- Ensure appropriate language is incorporated into the SOW to protect IBM from delays outside of IBM's control.
- Ensure appropriate language is incorporated into the SOW to protect IBM from early termination.
- The signed contract should have precedence, regardless of any changes to the customer management team. In the event that changes are requested from the new management team, the normal Change Control process is in effect.
- The Project Executive should contact new management to determine their business objectives and strategy.
- Develop an IBM response or proposal which meets the requirements of new management.

5305. Ineffective relationship between IBM and customer

Description:

An ineffective relationship between IBM and the customer often is the result of a troubled project. It can, however, be the cause of a troubled project. In some situations a customer chooses IBM for a project even though IBM is not their "vendor of choice." Or the decision to use IBM was not the customer project sponsor's choice. In these situations the customer is often difficult to work with and can even try to "sabotage" the project. This obviously has a negative impact on the project's success.

Prevention Measures:

- Identify customer expectations and measurement for success as early as possible in, or preferably before, the project implementation. Determine customer's requirements for what meets minimum expectations. Set short range (one or two day) goals, and report on progress daily to establish successes early in the project. Under promise and over deliver wherever possible.
- Escalate issues such as these as soon as possible to the customer's executive management team. Solicit IBM executive management support in these escalations as necessary.
- The Project Executive is the key to the relationship. Communication with the customer must continue to take place with emphasis on the causes of the problems and resolution.

- Contract with the Relationship Alignment Solutions group to address and improve the customer relationship.

5306. Customer having financial problems

Description:

Economic conditions often cause customers to have financial difficulties, resulting in their inability to pay invoices promptly or in more serious situations the closure of a project. In these situations there is often little that IBM can do to prevent the problem, but there may be steps that can be taken to assist the customer through the financial problems.

Prevention Measures:

- Involve IBM Global Financing to investigate financing for the project.
- Investigate deferred billing arrangement.
- Decrease scope to reduce cost.

Subcontractor Issues

5401. Unfulfilled subcontractor responsibilities

Description:

Many of the IBM proposed solutions are dependent on the performance of subcontractors. When IBM signs a contract with a customer, IBM is on the line to deliver regardless of whether the subcontractor can ultimately deliver.

Prevention Measures:

- Thoroughly check references of the subcontractor for this type of solution.
- Review the subcontractor's detailed project and staffing plans.
- Require the subcontractor to provide detailed status reports and issue logs.
- Monitor performance of the subcontractor closely.
- Allow for resources, money and the time in the project plan for IBM to review and, if necessary, correct the subcontractor's work product before delivery to the customer.
- Add schedule buffer to the customer contract to cover for delays and corrections in the subcontractor's work.
- Develop a contingency plan for alternative resources and methods to back fill the subcontractor in case of default.
- If customer requires IBM to use a particular subcontractor, IBM should try to include a clause which allows IBM to terminate the contract if the subcontractor is unable or unwilling to complete its responsibilities.
- Ensure the subcontractor's SOW is:
 - consistent with the IBM customer SOW,
 - detailed enough for IBM to assess the probability of success, and
 - reviewed by IBM technical resources to assess viability.
- Follow IBM procurement processes to engage subcontractor. Use nationally approved contractors where possible to apply leverage on poor performance.
- If new subcontractor, or contractor required by customer, pay special attention to financial report provided by procurement.
- Request references and follow up with previous customers for level of satisfaction.
- Ensure that the subcontractor project plans are detailed enough and the status reporting is frequent enough to provide the IBM project team with "early warning" of potential impacts to project schedules and costs, so that appropriate risk mitigation plans can be established and executed mitigate the exposures.

5402. Ineffective relationship between IBM and subcontractor

Description:

Situations may exist where the relationship between IBM and a subcontractor becomes ineffective. This usually occurs when the subcontractor tries to go around IBM and interact directly with the customer or when the subcontractor feels they are being treated unfairly by IBM from a financial perspective on the

project. The breakdown of the IBM / subcontractor relationship can be devastating to the success of a project.

Prevention Measures:

- Establish expectations on conduct and contractual obligations as soon as the subcontractor is engaged.
- Advise the subcontractor of the legal issues involved in circumventing contracts.
- Establish a win-win relationship with the subcontractor just as with the customer.
- Ensure regular meetings are held with subcontractors to ensure issues are addressed and early warning on problems is obtained.
- If possible, ensure alternate suppliers are available to perform the services. IBM resources may be an alternative if problems arise.
- Enforce terms and conditions of the contract.

5403. Subcontractor cost overruns

Description:

It is often necessary to involve subcontractors on projects to supplement the IBM skills required to successfully deliver a project. It is mandatory that a Subcontractor SOW be agreed to and signed by both IBM and the subcontractor. This SOW should include estimates for providing the tasks and responsibilities assigned to the subcontractor and should be agreed to by both parties. There are instances, however, where these estimates are not accurate and result in overruns by the subcontractor.

Prevention Measures:

- Ensure that a Subcontractor SOW is agreed to by both parties.
- Ensure that the subcontractor was involved in developing the estimates and agrees to complete their tasks within the agreed-to estimates.
- Include clauses in the Subcontractor SOW to hold the subcontractor responsible for their estimates and protect IBM from cost overruns.
- During the engagement phase, thoroughly assess the capabilities and history of the subcontractors being considered. Identify their strengths and weaknesses and assess what level of assistance / support from IBM may be required to address those weak areas. These weak areas could be in project management, development, testing, etc. and will surely be highlighted during the execution of the project. If not addressed, they will be significant contributors to the cost overruns.

Internal IBM Issues

5501. Problems with OEM or IBM products

Description:

Several bids have been based on the assumption that an unannounced or new product would work in a new environment. However, it is sometimes the case that the products do not work as anticipated. In addition, certain IBM and OEM products are prone to problems if not properly used. Quick and adequate response from the product labs or third party manufacturers is not always possible or forthcoming. A product need not be unannounced or new to cause unexpected problems in an integration project. There have been situations where products have been generally available for months; however, they did not integrate into a new environment as expected.

Prevention Measures:

- Perform IBM Product Reviews
- Perform IBM Product Safety
- Perform Technical & Delivery Assessment as required by the WW QA Process.
- Conduct due diligence by modeling and testing the components to validate that they will work in the target environment.
- The IGS Product Review Trigger Tool should be utilized to determine if the defined solution contains a product or products requiring an IBM Product Review. See Section 2 of the QA Information database for a link to the "trigger tool" and more information on the Product Review process.
- Obtain a written commitment from the product lab or product owner outlining the level of support, cost and/or liability coverage you can expect to receive should problems arise with the product during the project.
- Set appropriate customer expectations. If new or untested components are to be integrated as a part of the solution, the customer should understand that there will be risks of delays in the integration effort. If a customer wants 100% assurance of a fit, then a fully-tested solution of standard available products should be proposed.
- If the customer wants leading (bleeding) edge components, then the customer should be made aware that a certain level of risk is inherent in implementing a solution in an untested environment.
- Conservative schedules and estimates should also be used to cover the unanticipated delays which invariably arise.
- Be prepared to propose an alternate solution if the components do not integrate as expected.
- Avoid the use of new products in an untested solution.
- Increase the risk rating of the project and include appropriate cost and schedule allowances for risk response.
- If the new system is to replace an existing system, do not plan on an immediate cut-over. Plan for a pilot phase where both systems can run concurrently.

- DOUs / Agreements should be drafted and agreed to by IBM and the respective OEM and IBM Product Labs / Support teams to provide timely support in problem identification/resolution of any problems found related to their products.

5502. Technology / architecture issues

Description:

In some situations project teams may uncover bugs or problems with existing IBM technology and/or architectures that impact the success of their project. This is different than #5501 which involves relatively new products. This root cause involves products that are not new.

Prevention Measures:

- Conducting the Technical & Delivery Assessment with the appropriate SME knowledge, experience and skills.
- In the case of problems found in existing products, the Project Manager must ensure the appropriate process is followed for reporting the problem. When schedules are impacted, escalation must occur. On-site support from the product house should be requested to resolve the problem if normal methods have proved ineffective. On-site support should also be requested for key testing points on the schedule if additional problems are expected or critical situations are possible.

5503. Failure of IBM to fulfill responsibilities with customer or other IBM organization(s)

Description:

Under certain circumstances and situations IBM fails to fulfill responsibilities to a customer, mainly because one IBM organization has failed to fulfill its responsibilities to another IBM organization in delivering the contract. This generally occurs when one IBM organization is acting in the role of service provider whereby they do not own the contract and are working for recovery, not revenue. The other organization owns the contract, has direct responsibility for the delivery of the contract to the customer, and receives the revenue for the contract. Too often, the service provider resources are "pulled" to work on a revenue contract for their own organization without fulfilling their responsibilities on the other contract.

Prevention Measures:

- Ensure a Document of Understanding (DOU) is agreed to between IBM organizations to clearly define expectations and time commitments.
- Secure executive sponsorship at the beginning of the project at a level that is sufficiently high to endorse any commitments.
- The same expectations and criteria that we communicated to our subcontractors must be applied to our IBM subcontractors, with the same level of due diligence exercised.

- Certainly there have been problems with this type of IBM interaction, and the parties in revenue sharing projects can forget their focus and create parochial issues. The project lead must recognize this early and take steps to resolve the underlying problem(s) before the customer is impacted.

5504. IBM project team morale or organizational issues

Description:

Team morale and organizational issues can often impact productivity and performance on a project. This is especially true when project resources are expected to work extraordinary amounts of overtime due to poor project estimating or lack of proper change management. This is especially true when they get no utilization credit and are not allowed to bill for their extra hours in order to keep project costs contained to the original estimate. Other factors such as unclear project definition and requirements can also impact the morale of the team.

Prevention Measures:

- Ensure that all team members are aware of the project requirements and expectations.
- Have project resources charge all time to the project - even though it may not be billed to the customer. This may impact gross profit, but team members will get utilization credit for the hours worked.
- Execute the change management process for changes in scope so that team members aren't expected to deliver additional work for no additional hours.
- Provide some team-building activities (dinners out, night at the movies, etc.). This only takes a little money - but can go a long way in keeping the resources on the project happy.

5505. Ineffective relationship between IBM organizations

Description:

With large complex projects it is often necessary to involve resources from more than one part of IBM. Performance targets and measurements are usually different and this often results in conflicts within the project team. Even worse, the customer frequently becomes aware of this internal conflict and then has the impression that IBM resources working on their project are not one team.

Prevention Measures:

- Be sure that Documents of Understanding (DOUs) are written between the groups to validate expectations, roles & responsibilities, and commitments.
- Conduct an IBM team meeting prior to work beginning at the project to ensure that all parties understand the project organization, roles & responsibilities, tasks, deliverables, completion criteria, etc.
- Secure executive sponsorship at the beginning of the project at a level that is sufficiently high to endorse any commitments.

- When two or more IBM organizations are working together on a single project, ensure there is an integrated plan and a single interface to the customer.

5506. IBM / Third Party alliance issues

Description:

Some projects require the use of software, hardware, or services personnel from third party suppliers with whom IBM has an alliance. These are typically our formal "business partners" and not simply subcontractors. There have been situations where associates from the third party alliances have bypassed IBM and tried to interact directly with the customer - even trying to convince the customer not to use IBM on the project. This causes a great deal of problems on the project and can impact customer satisfaction.

Prevention Measures:

- Establish the project roles & responsibilities for the project very early - even before the contract has been signed, if possible.
- Conduct a meeting with the third party alliance team members prior to meeting with the customer to establish the "game plan" for the project and get any issues resolved prior to starting work at the customer location.
- Develop a well-defined communication and escalation plan.
- Escalate any issues that surface immediately so that they can be resolved before the customer realizes there is a problem and the project becomes troubled.

5507. Multisite development issues

Description:

For large, complex projects that require a large number of developers and/or delivery personnel, it may be necessary to involve resources from several different locations. This makes the project much more difficult to manage because procedures and processes may vary by IBM location. Communication is often more complicated when multiple locations are utilized.

Prevention Measures:

- Try to contain all work to a single IBM location.
- If necessary to use multiple locations, try to assign groups of related tasks to each different IBM location.
- Establish a clearly defined communication and issue escalation plan at the beginning of the project.
- Subcontract Management disciplines and procedures apply.

5508. Offshore development issues

Description:

In some situations IBM may decide to use development resources that reside in a different geographical location than where the project is being delivered. Managing a project in these situations is often more complex because of time zone, language, or cultural differences.

Prevention Measures:

- Establish a detailed communication and status reporting plan at the beginning of the project to ensure that the project manager and remote developers are kept informed of work activities and issues.
- Conduct regular status calls (not just written status reports) to validate current status.
- Any work done offshore should have an interface person or project manager in the country contracting for the work. This will provide face time with the solution designers and end users to ensure the requirements are clearly understood. This person can then communicate to the offshore project members. They, in turn, will have a person who can answer questions or resolve issues who is familiar with their environment and the requesting party.

No Signed Contract

5601. Working without a signed contract or PCA

Description:

In many situations the customer is anxious to get their project started and asks IBM to begin work while still negotiating the SOW. In these situations IBM is often anxious to satisfy the customer's request and keep them happy. So the project team begins work without a signed SOW or contract. Beginning work without a signed SOW or contract exposes IBM to potential loss of revenue for work completed in the event that contract negotiations are not completed and a contract is not signed. There can also be insurance and security exposures for IBM associates working at a customer location without a signed contract. Working without a signed SOW or some other contractual document **SHOULD NEVER BE DONE.**

Prevention Measures:

- Prepare an IBM Letter of Authorization (LOA) that officially lets IBM start work on a project while the SOW or contract is still being negotiated. The LOA must be reviewed / approved by Quality Assurance prior to being given to the customer.
- Ensure that no project team members are allowed to begin work until the SOW or LOA has been signed.

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Basic Concepts of Project Management

Module X Team Exercise: Applying the Seven Keys Assessment

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Module X - Team Exercise Applying the Seven Keys to the Olympics Case

- You're approaching the end of the project and a full review will be held soon. In order to facilitate executive insight into the the project you will prepare a 7 Keys Assesment.



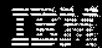
Basic Concepts of Project Management

Module XI: Closing the Project

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Objectives

At the end of this module, you should be able to:

- Identify closeout activities
- Prepare a closeout plan
- Develop and apply lessons learned for future projects

Why We Do Project Closeout

- Closeout is necessary to ensure:
 - Client / project sponsor formally accepts the project
 - Project records are completed
 - Completion criteria are met for the final revision and issuance of documentation
 - Essential project documentation is retained
 - A lessons-learned document is prepared
 - Warranty is transferred, where applicable

When do we start closeout ?

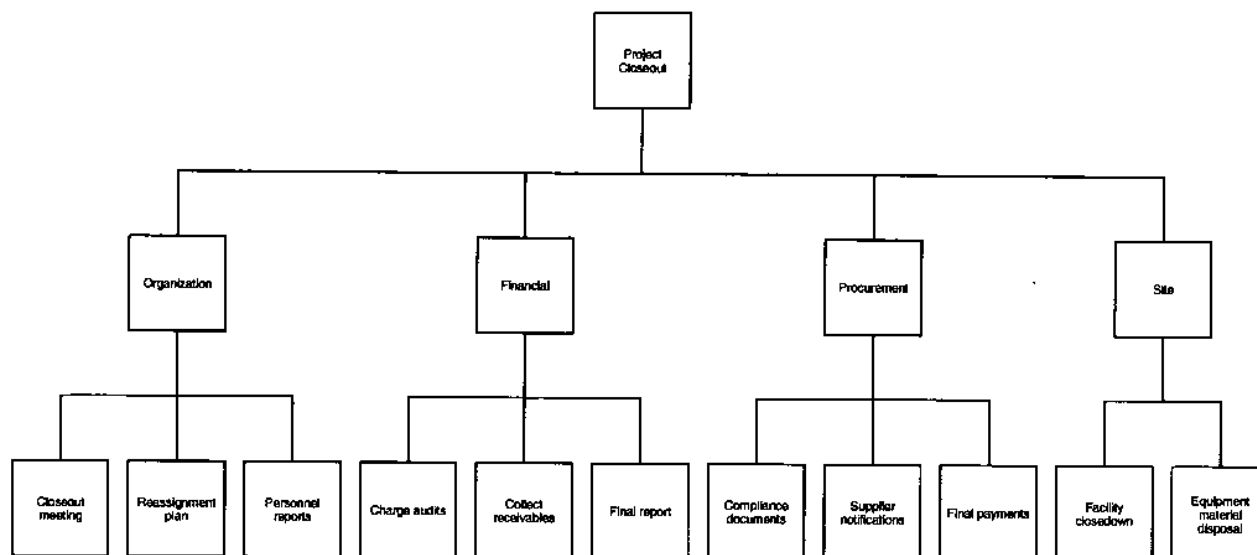
- On day 1 of the project - meeting with the client / project sponsor
- Closeout plan is part of the project control book (PCB)

Final Project Review

- Ensures that all contractual obligations (suppliers and client / project sponsor) have been met
- Do before the project ends to ensure that the project can and should end
- Prepare a report based on the reviews

Closeout Plan Implementation

- Review closeout plan with client / project sponsor
- Implement closeout plan
- Prepare a checklist



Lessons Learned

- Timely
- Relevant
- In context
- Detailed

Key Messages for Module 11

- Project closeout begins on day one of the project meeting with the client / project sponsor
- Closeout is necessary to ensure that:
 - Client / project sponsor formally accepts the project
 - Various project records are complete
 - Completion criteria are met for the final revision and issuance of documentation
 - Essential project documentation is retained
 - A lessons-learned document is prepared
 - Warranty is transferred, where applicable
- The closeout plan is part of the PCB; it should be reviewed with the client / project sponsor
- Actual closeout should be planned and budgeted just any other phase of the project life cycle

Basic Concepts of Project Management

Module XI Team Exercise: Closing the project

Module XI - Team Exercise Closing the Project

- Write the top 5 lessons learned for this project
- Each team will present 3 of them to the class (one related to one or more of your subprojects, one related to "soft" aspects of the whole project and the third one related to the "hard" aspects of it).
- Hint: Follow the Barcelona model for the document

Basic Concepts of Project Management

Module XII: Wrap Up

Objectives

- At the end of this course, you should be able to:
 - ▶ Use project management skills across AMS
 - ▶ Build your project team
 - ▶ Prepare a useful team charter
 - ▶ Identify and validate your project requirements
 - ▶ Manage transformation of requirements into specifications
 - ▶ Use change management to control requirements
 - ▶ Prepare a Work Breakdown Structure (WBS)
 - ▶ Prepare a risk management plan
 - ▶ Establish a project estimate
 - ▶ Compile and manage reliable network schedules
 - ▶ Develop and manage project baselines
 - ▶ Use project management skills and processes to control project execution
 - ▶ Prepare and execute a project closeout strategy

Objectives

- and you should be able to:
 - ▶ Apply Leadership concepts and techniques
 - ▶ Use PM oriented Metrics
 - ▶ Operate at a proper CMM level
 - ▶ Identify and apply all needed Business Controls
 - ▶ Use GS Method, Knowledge Management, Intellectual Capital Management, GS Risk, XSER, PCB, PM Office and CLAIM.
 - ▶ Understand and use the proper Procurement Administrative Circuits

Course Wrap Up

Any Final questions ? ? ?

Test Protocol

- 1 - Clear **everything** off the desktops and remove all charts from the walls
- 2 - Use pencil - mark **clearly** your choice for the correct answer
- 3 - Remain seated until is your turn at the grading desk - one person at a time, please.....
- 4 - Once you receive your results, please leave the room

Course Wrap Up

**Best of luck !!! and thanks
a lot for your attendance**

IBM Project Management Curriculum Glossary

Owner: Bill Phillips
Version 1.7
21 Dec 2001

Document Location

This document is found in: Project Management Curriculum Development Center on d27dbt07/27/A/IBM

Revision History

Revision Number	Revision Date	Summary of Changes	Changes marked
1.7	12/21/01	Merged Glossary updates from the current PMF/PMO NotesBook	N

Approvals

This document requires the following approvals. Signed approval forms are filed in the Quality section of the PCB.

Title
Curriculum Development Program Manager
Curriculum Structure and Content Architect

Note: This Title page is not intended to be distributed to students.

Glossary

Term	National Language Term	Definition
ABC		activity-based costing
Abilene Paradox		Recognition of the fact that it is just as difficult for people to manage agreement as it is to manage conflict.
acceptance ¹		Acknowledgment from the sponsor to the delivery organization or from the delivery organization to a supplier that a deliverable satisfies the acceptance criteria specified in the agreement. Written evidence of acceptance is generally required.
acceptance criteria		Where a deliverable is subject to acceptance defined in an agreement, the set of conditions that the deliverable must meet in order for the deliverable to be accepted.
accounting equation		Assets = Liabilities + Owners' Equity
acquisition		The act of becoming the owner of certain property; the act by which one acquires or procures the ownership rights in anything.
action		A unit of work that must be performed by the project that was neither included in the project work plans nor of sufficient impact to warrant a change to the project management schedule. Actions can be initiated for many reasons, such as a corrective action in response to a compliance issue or a risk planning action in response to a risk being identified.
action control document		The document that describes the actions and links them to their related issues or to other events requiring action in order to support determination, launching, and tracking of an action. This is a WWPMM work product.
action log		The list identifying all actions, the owner, due date, and status. This is a WWPMM PM Work Product.
action management		The processes dealing with assessing, assigning and launching, tracking, validating effectiveness, and closing actions.
activity		Generally, an element of work to be performed during the course of a project. More specifically, in the context of a work breakdown structure organized by Phase -> Activity -> Task, an activity is an element of work at a particular hierarchical level.
activity type		A classification of activities such that activities of the same type are assumed to have the same objective and content (e.g., performing a preliminary interview) and to require the same amount of effort from the same resource categories. Activity types often describe the technique used for estimation.

¹ When translating into other languages, this term must be translated very carefully. Additionally, its use must be consistent with local law.

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Current version can be found at <http://w3-3.ibm.com/transformation/project7education/preclass/reference.html>
GL-1

Underscore = WWPMM Terminology

Current version can be found at <http://w3.atanta.ibm.com/itops/classroom/projman.html>

GL-2

Glossary

Term	National Language Term	Definition
actual cost of work performed (ACWP)		Total costs incurred for a <u>project</u> , <u>sub-project</u> , <u>deliverable</u> , or <u>activity</u> in accomplishing work during a given period of time. In WWPMM, ACWP is calculated in two ways: • In terms of hours expended. • In terms of monies spent. (See also <u>earned value</u>)
actual damages		The real, measurable, out-of-pocket costs recoverable as compensation for actual loss.
actuals		Measurement of real evidence, as opposed to <u>forecast</u> . (See also <u>forecast</u>)
ACWP		actual cost of work performed
AD		application development
administrative closure		Generating, gathering, and disseminating information to formalize project completion.
AECI		agreement for exchange of confidential information
agency law		Law that allows one party, called the principal, to delegate authority to another party, called an agent, to act in all matters relating to the business of the principal.
agent (of IBM)		One authorized to transact all, or specifically designated, business of the principal at a specified place and time.
agreement		Used in a generic sense to cover any formalization of mutual commitments among parties. WWPMM addresses specifically the agreements between the sponsor and the <u>delivery organization</u> , or between the delivery organization and a <u>supplier</u> . The term agreement may cover: • A legal contract between two distinct enterprises or organizations. • An internal agreement between two parts of the same enterprise or organization (for example, a <u>document of understanding</u> or a <u>plan contract and offering proposal</u>). NOTE: The term agreement is also used to describe the initial agreement plus the sum of all amendments to date. (See also <u>contract</u> , <u>document of understanding</u> , <u>offering proposal</u> , <u>plan contract</u> , <u>statement of work</u>) <i>This is a WWPMM PM Work Product.</i>
agreement completion		Performing those activities required to conclude the agreement. Agreement completion typically signals the end of the temporary relationship defined by the agreement and occurs when all the obligations of the agreement have been satisfied. (See also <u>administrative closure</u>)
ALAP		as late as possible

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GL-3

Glossary

Term	National Language Term	Definition
astute/nurturing		Characteristic of an individual concerned with the protection, growth, and welfare of others.
amendment		A formalization of changes to the agreement. NOTE: This term is used in WWPMM to indicate a change to an agreement that is already in place, not those items that might be included in the original agreement as "amendments," such as changes to standard terms and conditions. <i>This is a WWPMM PM Work Product.</i>
analogous estimating		Also called top-down estimating; using the actual duration of a previous, similar activity as the basis for estimating the duration of a future activity (PMBOK® 6.3.2.2 and 7.2.2.1).
analytic-autonomizing		Characteristics of an individual concerned with planning and is fair and principled.
analytical skills		The power to simplify what is either complex or complicated.
AOA		activity-on-arrow
application		• A combination of programming and data that performs a useful function on behalf of users • The use to which a data processing system is put. It includes conventional applications, such as stock control or credit checking and also less tightly controlled environments such as a QMF service or spreadsheet, or management functions such as capacity planning or software distribution. Applications may consist of standard products, custom-built programs, or a combination of both. Application data is always unique to the installation.
approval to proceed		Authorization from IBM management and/or the project sponsor, depending on the type of project and the point in time, to proceed with the next stage of the project.
arbitration		The process of settlement of a dispute between two parties by an impartial third party. NOTE: IBM generally will not accept arbitration clauses in either client or supplier contracts.
ARP		automatic register pickup
as-of date		The point in time relative to which data is defined as actual (historical) data or future (scheduled) data. For example, costs as of September 1999.
ASAP		as soon as possible
ASPECT		Automatic SPeCials Card Tester
aspiration		A strong desire or ambition, as for advancement or honor.
assertive-directing		Characteristics of an individual concerned with task accomplishment.
assets		All items of value owned by a company.
assignment		The transfer of a right, a contractual obligation, or property from one party to another. Example: Under the International IBM Agreement, the client agrees not to assign its rights, delegate its obligations, or resell any service without IBM's prior, written consent.

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Glossary

Term	National Language Term	Definition
assumptions		Factors that for planning purposes will be considered to be true, real, or certain (PMBOK® 4.1.1.5).
attachment		Anything that attaches a thing to another. To make a thing part of. In contract law, usually a document attached to the base agreement that further explains, modifies, or supersedes certain aspects of the base agreement.
attitudes		One's disposition or opinion; position or stand; point of view.
audit		A systematic and independent examination to determine whether activities and related results comply with planned arrangements, and whether those arrangements are implemented effectively and are suitable to achieve objectives. (From ISO 8402) An audit focuses on analysis of evidence, followed by compulsory actions while an assessment is an appraisal with recommendations. (See also <u>review</u>)
authorized representatives		The only people who can make, accept, reject, defer, or negotiate change.
award		The act of granting or assigning a contract from a buyer to a seller. Phase 2 of the contract management process.
BAC		budget at completion
bankruptcy		The state of being insolvent; failure or inability to pay just debts or obligations.
bar charts (gant charts)		Show activity start and end dates and expected durations but do not usually show dependencies (PMBOK® 6.4.3.1).
baseline		The reference data on which execution of project activities is controlled. It consists of elements of the agreement and the project management plans. Once established, the baseline is under change control. When used with a modifier, the term defines a subset of the overall baseline, such as the cost baseline. (See also <u>project management plans</u>)
BCR		benefit-cost ratio
beliefs		Anything accepted as true; a creed, doctrine, or tenant; an opinion, expectation, or judgment.
benefit-cost analysis		Estimating tangible and intangible costs (outlays) and benefits (returns) of various project alternatives and using financial measures such as return on investment or payback period to assess the relative desirability of the identified alternatives (PMBOK® 5.2.2.2).
best efforts		A statement in a proposal or contract that implies that the buyer or seller will put forth its best skills and dedication with the intent of meeting an obligation.
best estimate		The estimated cost of a project based on the currently known facts regarding scope, schedule, and expectations. See time-and-materials.
bid		An offer to perform a contract for work. Would include labor and/or supplying materials or goods and/or services at specified price.
bid bond		A monetary guarantee that the bidder, if awarded a contract, will in fact execute (sign) it. NOTE: A bid bond expires automatically at the time the contract is signed by the parties, or if the contract is not awarded.

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GL-5

Glossary

Term	National Language Term	Definition
BMWB		Business Management WorkBench
bond		A monetary guarantee to cover losses suffered for specified reasons, an obligation or constraint. See also bid bond; performance bond.
bottom-up estimating		Estimating the cost of individual work items and then summarizing or rolling up the individual estimates to get a project total (PMBOK® 7.2.2.3).
breach of contract		Violation of a contractual obligation, either by failing to perform one's own promise or by interfering with another party's performance.
BRS		Business Recovery Services
budget		The total amount of labor hours and/or monies allocated for a specific purpose during a specific period. Usually used with a modifier (e.g., <u>project</u> , <u>sub-project</u> , <u>activity</u> , or <u>deliverable</u>). NOTE: Budget in terms of monies can be calculated in various ways and care must be taken to understand the basis of the calculation (e.g., using standard labor rates and costs, using discounted labor rates and costs, using average labor rates and costs).
budget estimate		(See <u>estimate</u>)
budget at completion (BAC)		The estimated total cost of the project when done.
budgeted cost		(See <u>budget</u>)
budgeted cost of work performed (BCWP)		The sum of the budgets for a <u>project</u> , <u>sub-project</u> , <u>deliverable</u> , or <u>activity</u> completed during a given period (usually project-to-date). In simple terms, BCWP is the costs that should have been incurred for the work completed to date. In WWPMM, BCWP is calculated in two ways: • In terms of hours expended. • In terms of monies spent. In addition, BCWP in terms of monies spent is calculated both for labor only and for labor plus all other costs. (See also <u>earned value</u>)

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Glossary

Term	National Language Term	Definition
budgeted cost of work scheduled (BCWS)		The sum of the <u>budgets</u> for a <u>project</u> , <u>sub-project</u> , <u>deliverable</u> , or <u>activity</u> scheduled to be performed during a given period (usually project-to-date). In simple terms, BCWS is the costs that should have been incurred for the work that should have been completed to date. In WWPMM, BCWS is calculated in two ways: • In terms of hours expended. • In terms of monies spent. In addition, BCWS in terms of monies spent is calculated both for labor only and for labor plus all other costs. (See also <u>earned value</u>)
business alliance		Business entities that work in close association for a common objective.
business need		Problem or challenge faced by the project <u>sponsor</u> or a subset of the market that can be partially or wholly addressed by the <u>target solution</u> .
business review		One of three types of <u>health review</u> defined in WWPMM. A <u>review</u> that focuses on the state of the business as measured against elements of the project plan. Business reviews are conducted by IBM only and are outside the scope of WWPMM.
business alliance		Business entities that work in close association for a common objective.
business partner		A business entity with a special relationship to a <u>principal</u> , making it easier to jointly address a business opportunity.
buyer		A person who buys or contracts to buy goods and/or services.
buyer's right		The buyer's power, privilege, faculty, or demand, inherent in one person and incident upon another.
B&F		best and final
cartel		A combination of producers of any product joined together to control its production, sale, and price so as to obtain a monopoly and restrict competition in any particular industry or commodity.
CASE		Computer-Aided Software Engineering
cause		1. Something that produces an effect or result (the cause of the accident). 2. A ground for legal action.
CDRL		contract data requirements list
CEC		IBM Corporate Executive Committee
certification of originality		A written assurance, or official representation, of product or materials ownership.
change control board (CCB)		A formally constituted group of <u>stakeholders</u> responsible for approving or rejecting change requests. (See also <u>project decision structure</u>)
change log		The list of all changes, the owner, due date, and status. <i>This is a WWPMM PM Work Product.</i>

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Current version can be found at <http://w3-3.ibm.com/transform/project?education/preclass/reference.html>
GL-7

Glossary

Term	National Language Term	Definition
change management		The processes for handling a <u>change request</u> to its completion. Execution of change management may result in changes to the <u>baseline</u> . Not used in WWPMM to describe management of business or organizational changes.
change order		A directive to implement a change resulting from an accepted <u>change request</u> . <i>This is a WWPMM PM Work Product.</i>
change request		A request to change some document or aspect of the <u>project</u> that has been placed under change control. An accepted change request may result in one or more <u>change orders</u> . <i>This is a WWPMM PM Work Product.</i>
charter		(See <u>project charter</u>)
checkpoint schedule		A variation of operational schedule, used when the progress of the work is constrained by steps, each of which must be completed in order to complete the work as a whole, and with which values of percent complete are associated. See operational schedule.
ChM		Change management PM domain
CHQ		corporate headquarters
civil law		The body of law created by acts of legislature and concerned with civil or private rights and remedies.
clarifying		Making or becoming easier to understand.
client		A term commonly used to refer to the <u>customer</u> in services engagements. (See <u>customer</u> ; see also <u>sponsor</u>) NOTE: WWPMM generally uses the term "customer" instead of "client".
closure documentation		Communication between the <u>sponsor</u> and the <u>delivery organization</u> , or between the <u>delivery organization</u> and a <u>supplier</u> , acknowledging that the <u>agreement</u> is completed. Provides evidence that all terms of the agreement have been satisfied and all work has been completed. (See also <u>administrative closure</u>)
CPFF		cost plus fixed fee
CPI		cost performance index
CPIF		cost plus incentive fee
COE		center of excellence
cohesion		The act or condition of sticking together; blending or merging.
CoM		Communications Management PM Domain

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GL-8

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Glossary

Term	National Language Term	Definition
commitment		1. The process to obtain responses to bids from two or more sources to purchase materials, goods, and/or services. 2. The manner in which a project or product deliverable is measured to ensure it meets the requirements for acceptance as defined in the statement of work or requirements document. 3. Agreement or pledge to do something. When given on external contracts, commitments are legally enforceable.
common law		The body of those principles and rules of action that derive their authority from tradition, usage, custom, and previous judicial decisions.
common sense		Sound and prudent judgment.
communicating		Exchange of information (PMBOK® 2.4.2).
communication requirements		Sum of the information requirements of the project stakeholders (PMBOK® 10.1.1.1).
communications management plan		Document that describes the plan to meet the information and communications needs of stakeholders; that is, who needs what information, when they will need it, and how they will receive it. <i>This is a WWPMM PM Work Product.</i>
communications planning		Determining the information and communications needs of the project stakeholders.
communications management		The processes that: - Ensure timely and appropriate collection, generation, dissemination, storage, and disposition of project information. - Provide the critical links among people, ideas, and information that are necessary for success.
competent parties		Persons or legal entities possessing legal capacity and authority to enter into a contract.
completion criteria		Objective criteria by which it can be determined that an activity has been completed, usually related to the release of its associated work products, if any.
completion status		A measure of completeness resulting from an analytical assessment and a subjective assessment that describes the status of a work product, deliverable, or activity. The assessment addresses issues of cost, schedule, and quality.
compliance incident		Event in which the sponsor or a supplier is not meeting an obligation under the agreement.
compliance incident document		A document that records the information about an event in which the sponsor or a supplier is not meeting an obligation under the agreement. It contains the initial description, progress of resolution, and final assessment of damage. This is a WWPMM work product.
compliance incident log		The list of compliance incidents, the sponsor or supplier involved, the owners, due dates, and status. <i>This is a WWPMM PM Work Product.</i>

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Current version can be found at <http://w3-3.ibm.com/transformation/project7education/preclass/reference.html>

GL-9

Glossary

Term	National Language Term	Definition
compliance review		A review intended to ensure that policies and procedures are being followed by the project and to identify improvements to procedures. Compliance reviews may be conducted by an IBM organization external to the project, by the sponsor, or by an outside body.
component deliverable		Any subpart of an intermediate, higher-level deliverable with the attributes of a deliverable.
composer		A person who creates or develops.
condition		Component of a statement of risk; a single phrase or sentence that briefly describes the key circumstances or situations causing the doubt, concern, anxiety, or uncertainty.
confidential information exchange		Legal agreement between two parties to exchange information which is intended to be held in confidence or kept secret.
confidentiality		State or quality of being confidential; treated as private and not for publication. A special term and condition in IBM's contracts that covers the agreement on the exchange of confidential information between parties to a contract.
configuration item		A work product, work product component, or element on a product breakdown structure that is designated to be placed under configuration management.
configuration management		The process of defining, monitoring, and controlling the status and versions of the components of a system, which together constitute a consistent whole for a period of time.
conflict of interest		Engaging or giving the appearance of engaging in any activities or advancing any personal interest at the expense of IBM's interest.
consequence		Component of a statement of risk; a single phrase or sentence that briefly describes the key possible outcome(s) of the current conditions.
consequential damages		Damages that do not flow directly and immediately from the act of a party, but only from some of the consequences or results of the act. Example: The client's point of sale system is down for four hours due to a software problem. As a result, the client claims to have lost hundreds of thousands of dollars due to lost sales.
consideration		Something of value.
Consolidated Statement Facility (CSF)		An IBM program that enables a customer involved in a multinational deal to pay all its bills centrally in one currency.
constituency		A group of people in a company or organization with a common set of characteristics, such as market segment, business model, geography, profession, and so on (e.g., Managed Operations, Brands, EMEA, Education Industry.)
constraints		Factors that will limit the project management team's options (PMBOK® 4.1.1.4).
contextual description		Applies to PM work pattern steps, briefly summarizing what has to be done or considered by the project manager. This description provides context for the PM to appreciate the guidance given by the related processes. (See PM work pattern step; see also PM work pattern)

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Glossary

Term	National Language Term	Definition
contingency plan		(See <i>risk contingency plan</i> .)
contingent terms		Possible, but not assured; conditions upon which the term is fulfilled or accomplished.
contra preferentem		Means that an ambiguous provision is construed most strongly against the person who selected the language or wrote the contract.
contract		A legally binding form of commitment between parties. An IBM contract usually consists of: - a base agreement that sets the basic terms and conditions, - attachments (e.g., <i>amendments</i>), specifying additional terms relative to specific details, including special terms and conditions, - transaction documents (e.g., <i>statements of work</i>), which confirm the specific details, including special terms and conditions, relative to a particular transaction. (See also <i>plan contract, agreement</i> .)
contract administration		Process of ensuring that the seller's performance meets contractual requirements (PMBOK® 12.5).
contract authority		The power that the principal confers on the agent to act on his or her behalf to enter into a contract.
contract closeout		Completion and settlement of the contract, including resolution of all outstanding items (PMBOK® 12.6).
contract law (Uniform Commercial Code (UCC))		A model law developed in the United States to standardize commercial contracting among the states.
contract management		The process of planning, forming, and administering an agreement to buy and/or sell goods and/or services from one party to another.
contract negotiation		Clarification and mutual agreement on the structure and requirements of the contract prior to the signing of the contract (PMBOK® 12.4.2.1).
contract types		The most common contracts type include: Firm-fixed-price (FFP); Fixed-price-incentive fee (FPIF); Cost-plus-fixed fee (CPFF); Cost-plus-incentive fee (CPIF); Time-and-Materials (T&M); and Level-of-effort (LOE). Generally refers to how the buyer will compensate the seller.
contractor		One that contracts to do work for another.
control		(See <i>project control</i> .)

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Glossary

Term	National Language Term	Definition
controversial defect		A finding whose status is ambiguous. The finding is classified as a controversial defect until it can be agreed that it falls into one of the following categories: - not a defect (i.e., conforms), - non-conformity, - other (such as a wish for future versions). Usually results from unclear or incomplete <i>requirements, specifications, or acceptance criteria</i> . Therefore, the assignment of responsibility for dealing with such a situation must be negotiated with the <i>sponsor</i> or the <i>supplier</i> and may result in a change request (usually a scope change).
copyright		The right to literary property, giving authors, composers, and other creators the sole right to reproduce and distribute their work for a limited period of time.
corrective action		From ISO 8402, an action taken to eliminate the causes of an existing <i>non-conformity, defect</i> , or other undesirable situation in order to prevent recurrence. In WWPPM, corrective action is used more broadly to mean changes made to bring future performance of the <i>project</i> into line with the <i>quality system</i> or <i>work plans</i> .
correspondence log		A tracking list of the individual correspondences with identifying information such as sender, recipient, date, and category. This is a WWPPM work product.
cost baseline		A time-phased budget used to measure and monitor cost performance on the project (PMBOK 7.3.3.1).
cost budgeting		Allocating the cost <i>estimates</i> to individual project components.
cost control		The process of comparing <i>actual</i> costs with <i>planned</i> costs, analyzing <i>variances</i> , evaluating possible alternatives, and taking <i>corrective action</i> as needed. (See also <i>control, change management</i> .)
cost performance index (CPI)		The ratio of budgeted costs to actual costs (BCWP/ACWP). CPI is often used to predict the magnitude of a possible cost overrun using the following formula: original cost estimate/CPI = projected cost at completion. (See also <i>earned value</i> .)
cost schedule		A list and sum of cost elements showing the total cost for each category of cost, such as resources, hardware, software, and so on over one or several periods of time. This is a WWPPM PM Work Product.
cost variance (CV)		(1) Any difference between the budgeted cost of an <i>activity</i> and the actual cost of that activity. (2) In earned value, <i>BCWP</i> less <i>ACWP</i> .

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Glossary

Term	National Language Term	Definition
cost (or direct cost)		The expenditure of funds that result directly from production products and/or establishing an infrastructure to provide services. A (direct) cost can be traced to the finished product or service.
cost baseline		Time-phased budget used to measure and monitor cost performance on the project (PMBOK® 7.3.3.1).
cost estimating		Estimating the cost of the resources needed to complete project activities.
cost of quality		The costs incurred to ensure quality. The cost of quality includes quality planning, quality control, quality assurance, and rework.
cost variance (CV)		(1) Any difference between the estimated cost of an activity and the actual cost of that activity. (2) In earned value, BCWP less ACWP.
cost reimbursement contract		A type of contract in which the seller gets reimbursed for costs of producing the item. Also a category of contract types that includes cost-plus-incentive-fee (CPIF), cost-plus-fixed-fee (CPFF) and cost-plus-award-fee (CPAF).
cost-plus-incentive fee (CPIF) contract		A type of contract in which the buyer reimburses the seller for the seller's allowable costs (allowable costs are defined by the contract), and the seller earns its profit if it meets defined performance criteria.
Cost-Plus-Award Fee (CPAF)		A type of contract in which the seller gets reimbursed for costs of producing the item and gets paid a fee for winning the contract.
cost-plus-award fee (CPAF)		A type of contract in which the seller gets reimbursed for costs of producing the item and gets paid a fee for winning the contract.
Cost-Plus-Fixed Fee (CPFF) contract		A type of contract in which the buyer reimburses the seller for the seller's allowable costs (allowable costs are defined by the contract) plus a fixed amount of profit (fee).
cost-plus-fixed fee (CPFF) contract		A type of contract in which the buyer reimburses the seller for the seller's allowable costs (allowable costs are defined by the contract) plus a fixed amount of profit (fee).
Cost-Plus-Incentive Fee (CPIF) contract		A type of contract in which the buyer reimburses the seller for the seller's allowable costs (allowable costs are defined by the contract), and the seller earns its profit if it meets defined performance criteria.
Cost Plus Percentage-of-Cost (CPPC)		A type of contract in which the seller gets reimbursed for the cost of producing the item and also gets a fee calculated as a percentage of cost. Not permitted in contracts with the federal government.
CPM		critical path method
CPU		central processing unit
CR		cost reimbursement
crashing		Decrease total project duration after analyzing alternatives to determine how to get the maximum duration compression for the least cost.
critical path		In a project network diagram, the series of activities which determine the earliest completion of the project. The critical path will generally change from time to time as activities are completed ahead of or behind schedule. Although normally calculated for the entire project, the critical path can also be determined for a milestone or a sub-project. The critical path is usually defined as those activities with a float less than or equal to a specified value, often zero.

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Glossary

Term	National Language Term	Definition
critical path method (CPM)		Calculates a single, deterministic early and late start and finish date for each activity based on specified, sequential network logic and a single duration estimate. Float is calculated to determine which activities have the least scheduling flexibility (PMBOK® 6.4.2.1).
CRM		Customer Relationship Management
CRR		comparative risk ranking
CS		Consolidated Statement
CSF		Consolidated Statement Facility
CUPRIMDSO		capability, usability, performance, reliability, installability, maintainability, documentation, service, overall
CUPRIMD		capability, usability, performance, reliability, installability, maintainability, documentation
current project		The delivery organization's project, usually referred to in WWPMM as simply "the project." May only provide a subset of the target solution, which may itself address only a subset of the business need.
customer		The recipient of a product or service provided by the delivery organization. The customer may be the ultimate consumer, user, beneficiary, or purchaser. (ISO 8402) In WWPMM, the customer may also be the sponsor.
Customer Relationship Management (CRM)		One of two major corporate business processes (with Integrated Product Development) within IBM. CRM defines standards for how we respond to every customer, particularly in the delivery of services engagements.
CV		cost variance
damages		Compensation recoverable for a wrong or an injury. See also actual damages; consequential damages; liquidated damages.
DBMS		Database Management System
DCP		decision checkpoint
decomposition		Process used to develop the PBS/WBS by subdividing the major work products into smaller, more manageable components until each is defined in sufficient detail to support future project activities.
default		The omission or failure to perform a legal or contractual duty; esp., the failure to pay a debt when due.
defect		An aspect of a work product or a deliverable that does not meet its intended purpose. In contrast to a non-conformity, a defect can be viewed as an inadequacy with respect to needs or general expectations. In technical work, defect can also be the entry in a defect management system used to describe and track responses to the inadequacy. (See also controversial defect and latent defect)
deferred payment		The buyer's making payment to the seller some period of time after the deliverable has been accepted for the convenience of one or both of the parties.
delayed invoicing		The seller's invoicing the buyer some period of time after the deliverable has been completed for the convenience of one or both of the parties.

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Glossary

Term	National Language Term	Definition
deliverable²		A <u>work product</u> that must be delivered according to an <u>agreement</u> . A work product that is not specified in an agreement is not referred to as a deliverable; it is simply a work product. NOTE: The WWPMM definition of deliverable is much more specific than common usage in some parts of IBM, where it is used as an equivalent to work product.
deliverable component		A portion of a <u>deliverable</u> that is, itself, visible to the receiving organization.
deliverable definition		A description of a <u>deliverable</u> or <u>deliverable component</u> together with its associated <u>acceptance criteria</u> and status information. <i>This is a WWPMM PM Work Product.</i>
deliverable review		A <u>review</u> of a deliverable or <u>deliverable component</u> before releasing it to the <u>sponsor</u> to ensure that no open items remain and that it is ready to be delivered.
deliverables management		The management of the life cycle of deliverables from definition through acceptance.
delivery control documentation		A paper or electronic record from the delivery organization to the sponsor or to a supplier to furnish evidence of release, receipt, and/or acceptance of a deliverable. This document has up to three components: a delivery notification, a delivery receipt, and an acceptance notification. <i>This is a WWPMM PM work product.</i>
delivery organization		The organization that enters into an <u>agreement</u> with the <u>sponsor</u> and is responsible for meeting the obligations of the agreement. The delivery organization is responsible for setting up the project team, may provide the top-level project manager (who will act on behalf of the delivery organization), ensuring completion of <u>deliverables</u> , and releasing deliverables to the <u>sponsor</u> .
delivery plan		A list of the deliverable definitions associated with project <u>milestones</u> . The delivery plan is typically included in the <u>agreement</u> or as a sub-component of the <u>statement of work</u> and describes the products and services to be delivered by the <u>delivery organization</u> to the <u>sponsor</u> or by a <u>supplier</u> to the delivery organization.
dependency		An input/output and/or time-related relationship. A project dependency exists between two project elements (for example, <u>activity</u> , <u>sub-project</u> , <u>milestone</u>). An external dependency exists between the project and an organization, activity, or event outside the project.
depreciation		A method that spreads the cost of a long-lived asset over its entire service life.
derivative works		Under copyright law, a work based on a pre-existing work.
deviation		(See <u>variance</u> , see also <u>cost variance</u>)

² When translating into other languages, the term must be translated very carefully. Additionally, its use must be consistent with local law.

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Glossary

Term	National Language Term	Definition
dispute		A conflict or controversy; a conflict of claims or rights; an assertion of a right, claim, or demand on one side, met by contrary claims or allegations on the other. The subject of litigation; the matter for which a suit is brought.
DM		Deliverables Management PM Domain
document of understanding (DOU)		The name commonly used within IBM for an <u>agreement</u> between two IBM organizations.
domain		(See <u>project management domain</u>)
duration compression		Shortening the <u>project schedule</u> without reducing the project objectives or <u>deliverables</u> . Such compression increases <u>risk</u> , often increases cost, and may not be possible.
duration		The number of work periods (not including holidays or other non-working periods) required to complete an activity or other project element; usually expressed as workdays or workweeks; sometimes incorrectly equated with elapsed time.
duration compression		Shortening the project schedule without reducing the project objectives or deliverables. Such compression increases risk, often increases cost, and might not be possible.
e-BIDS		A tool, available from the Global Customer Offerings (GCO) Web site, that enables opportunity owners, client teams, bid managers, and prices to work collaboratively to determine a price for a generally available product.
E-I		Extravert-Introvert
EAC		estimate at completion
early finish (EF)		In the critical path method, the earliest possible point in time on which the uncompleted portions of an activity (or the project) can finish based on the network logic and any schedule constraints; early finish dates can change as the project progresses and changes are made to the project plan.
early start (ES)		In the critical path method, the earliest possible point in time on which the uncompleted portions of an activity (or the project) can start, based on the network logic and any schedule constraints; early start dates can change as the project progresses and changes are made to the project plan.
earned value (EV)		The budgeted cost of work performed for an <u>activity</u> or group of activities. (See also <u>actual cost of work performed</u> , <u>budgeted cost of work scheduled</u> , <u>budgeted cost of work performed</u> , <u>cost variance</u> , <u>cost performance index</u> , <u>schedule variance</u> , and <u>schedule performance index</u> .)
EC		engineering change
earned value analysis		The process of comparing actual performance with planned performance using <u>earned value</u> as the method for measuring project performance.

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Glossary

Term	National Language Term	Definition
education plan		A description of project-related training planned for individuals or human resource categories assigned to a project . The education plan is a part of the human resource plan .
education		Process of training and developing knowledge, skills, and character by formal schooling.
EF		Early finish
effort		The number of labor units required to complete an activity or other project element. Usually expressed as staff hours, staff days, or staff weeks. Should not be confused with duration .
elapsed time		Number of calendar days over which the task occurs.
Electromagnetic Compatibility (EMC) standards		National and international standards that govern electromagnetic interference of electronic devices.
EM		Event Management PM Domain
EMEA		Europe Middle-East Africa
emotional issues: causes of self-oriented emotional behavior		Behaviors displayed by individual team members sometimes at the expense of the rest of the team and its objectives.
Enhanced Cost Recovery (ECR)		A business management system used to motivate local countries to support a multinational project. ECR provides a method for giving a country or IBM organization a cost credit (of about 25 percent) for measurement purposes when lending staff to another country or organization.
entrepreneurial		Organizing and managing a business undertaking.
equitable treatment (of suppliers)		Just; conformable to the principles of justice and right in which suppliers are treated.
equity participation		The extent of an ownership interest in a venture.
ERISA		Employee Retirement Income Security Act
ERP		Enterprise Resource Planning
ES		early start
escrow		The deposit of something into the care of a mutually agreed upon custodian for delivery to the grantee on some defined set of conditions. NOTE: IBM will absolutely not agree to put into escrow the source code for any of its licensed programs.

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Glossary

Term	National Language Term	Definition
estimate		An assessment of the likely quantitative result based on experience and/or historical data from previous projects, if any. Usually applied to effort, project costs (labor hours and/or monies) and durations , and should ideally include some indication of accuracy (e.g., plus or minus x%). Usually used with a modifier (e.g., preliminary, conceptual, feasibility). Contrasts with forecast , which is based on experience and data from the current project.
estimate at completion (EAC)		The expected total cost (labor hours and/or monies) of an activity , group of activities, or the project when the planned work has been completed. Most techniques for forecasting EAC include some adjustment of the original cost estimate based on project performance to date. Often shown as EAC = actuals-to-date + ETC. (See also earned value estimate to complete)
estimate to complete (ETC)		The expected cost (labor hours and/or monies) needed to complete what remains to be done when an activity or group of activities has been undertaken. Most techniques for forecasting ETC include some adjustment to the original estimate based on project performance to date. (See also earned value estimate at completion percent complete)
estimating basis		Effort, cost, or duration required to: • Perform a type of activity or task. • Create a type of PBS element. A standard estimating basis is created by measuring and averaging real efforts over time. This historical value is used to produce an estimate .
ETC		estimate to complete
ethical behavior		Related to the manner in which individuals perform work related to moral actions, conduct, motive, or character. Conforming to professional standards of conduct.
EU		estimating unit
EV		earned value
event		In project scheduling, starting points and ending points of activities are known as events. Events are specific points in time typically represented by circled numbers in a schedule. An example of an event is Begin Code Development.
event log		The list of events that, in the project manager's opinion, are important to remember for later reference or analysis. This is a WWPM work product.
event management		The processes necessary to collect project issues and monitor their resolution, analyze symptoms that are causing concern about a particular project situation, handle compliance incidents, and handle actions.

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Glossary

Term	National Language Term	Definition
exceptions to finality of acceptance		The character or conditions that could legally prevent finality of acceptance due to fraud, gross mistake, or latent defect.
exclusions		Statements of "not included" for the current project.
expenditure log		A list that maintains a record of the actual expenditure by category, the amount, date, and document reference. This is a WWPMM work product.
expense (also known as indirect costs)		The funds a company spends in order to sell services and products. Examples include rent, utilities, depreciation, and so forth.
external risks		Risks beyond the control or influence of the project team (PMBOK® 11.1).
extraversion		Focusing attention and energy outside oneself.
facilitating communication		Making it easier to exchange information.
facilitating understanding		Making it easier to explain difficult ideas.
FAN		financial performance analysis
fast tracking		Doing activities in parallel that normally would be done in sequence.
FF		finish-finish
FFP		firm fixed price
finality of acceptance		The character or condition of being finished, complete, conclusive.
financial measurement baseline (FMB)		A detailed financial plan which has been agreed-upon and placed under change control.
financial plan		A detailed, time-phased budget. A list and sum of cost elements and revenue when appropriate showing the total amounts for each category of expenditure and revenue, such as staff, hardware, software, and others, and distributed over one or more periods of time. This is a WWPMM work product.
findings log		A record of the identification and resolution of findings including the description, severity, category, date, proposed resolution, and status. This is a WWPMM work product.
finding(s)		The results of an investigation, usually used in plural. WWPMM uses this term in two situations: 1. When speaking of the results of a compliance review, some findings might then result in corrective actions. 2. When speaking of the acceptance of a deliverable, some findings might identify non-conformities that have to be fixed, some others may fall into the category of controversial defects until an agreement has been reached on their status.
firm-fixed-price (FFP) contract		A type of contract in which the buyer pays the seller a set amount (as defined by the contract) regardless of the seller's costs.
fixed-price contract		See firm-fixed-price contract.
fixed-price-incentive fee (FPIF) contract		A type of contract in which the buyer pays the seller a set amount (as defined by the contract), and the seller can earn an additional amount if it meets defined performance criteria.
flexible-coaching		Characteristic of an individual able to meet conflict and opposition flexibly.

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Glossary

Term	National Language Term	Definition
float		The amount of time an activity may be delayed from its <u>early start</u> without delaying the project <u>finish date</u> . Float is a mathematical calculation and can change as the project progresses and changes are made to the project plans. Also called slack.
FMB		Financial Measurement Baseline
FNET		finish no earlier than
FNLT		finish no later than
forbearance		Influenced or dependent on previously existing terms or agreements; an intentional failure of a party to enforce, or willingly delay enforcement of, a contract requirement, usually done for an act of immediate or future consideration from the other party.
force majeure		An act of God or irresistible force, or inevitable accident that could not be avoided by the exercise of due care. Examples: Earthquake, fire, flood, hurricane, third-party labor dispute/strike.
forecast		Predicted measurement of value, as opposed to <u>actuals</u> . (See also <u>actuals</u> .)
FPIF		fixed price incentive fee
FPIEPA		fixed price with economic price adjustment
fraternal		Having common interests or beliefs.
fraud		An intentional perversion of the truth; a false representation.
free float		The amount of time an activity can be delayed without delaying the early start of any immediately following activities.
FS		Finish-Start
FTE		full time equivalent
function		(1) A related set of activities, skills, and resources in a specialized department or area (e.g., production, marketing, engineering, and accounting at the top level; with engineering further divided into mechanical, electrical, and chemical). (2) Also used in its common English sense.
functional manager		A manager responsible for resources within a <u>function</u> and for delivering on the commitments made to various projects. Functional managers typically manage a competence (such as system assembly or marketing) as opposed to having responsibility for a specific offering or project. Sometimes referred to as a line manager.
functional organization		An organization structure in which staff are grouped hierarchically by <u>function</u> and may be assigned to projects in a team or matrix structure.
GA		general availability
Gantt chart		A graphic display of schedule-related information. In the typical Gantt chart, activities or other project elements are listed down the left side of the chart, dates are shown across the top, and activity durations are shown as date-placed horizontal bars.

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Glossary

Term	National Language Term	Definition
general and administrative		A non-overhead related expense not directly attributable to a single project. This account is generally used by administrative and senior management.
governing law		The country or state law applicable to the contract.
gross mistake		A grave error, caused by negligence or incompetence, with significant negative consequences.
gross profit		The amount remaining after all revenues are accounted for and all (direct) costs are deducted, but before all (indirect) expenses are deducted.
GS		Global Services
G&A		general and administrative
health review		A review that focuses on a project's condition or ability to meet stated objectives, and on necessary corrective actions. Health reviews are divided into three types in WWPMM: • Technical reviews: A type of review that focuses on the technical aspects of the project, including work products and deliverables, covering areas such as traceability of requirements, architecture, technology competitiveness, and so on. • Project management reviews: A review that focuses on the planning and control aspects of the project. • Business reviews: A review that focuses on financial and business exposures. Business reviews are conducted by IBM only. Business reviews are outside the scope of WWPMM.
holdback		Nondelivery of a product or nonpayment of an obligation due as a means of applying pressure to the receiving party.
homologation		The process of obtaining government agency approval to attach telecommunications products to a public telecommunications network.
HR		human resources
HRM		Human Resource Management PM Domain
human resource category		A categorization of skills that is useful in matching resource requirements to particular people (for example, senior consultant or COBOL programmer). Within IBM, human resource category is often analogous to job class or skill category.
human resource management		The processes to effectively manage human resource activities on a project. It includes processes to plan for, obtain, introduce, assess, and release staff over the life of the project.
human resource plan		A plan showing the number of people required for the project by human resource category, with required experience and skill levels, timeframe, office and material requirements, and an education plan for each category. This is a WWPMM PM Work Product.
HW		hardware
IBM		International Business Machine Corporation

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Glossary

Term	National Language Term	Definition
IBM Global Services International Agreement (IGSI)		One of four master agreements—specifically for "highly negotiated," complex services such as strategic outsourcing, systems integration, network station management, and application development and maintenance—used for multinational projects. See also IBM International Customer Agreement, International Service Provider Agreement, and IBM International Agreement for Services.
IBM International Agreement for Services (IIAS)		One of four master agreements—specifically for services only—used for multinational projects. See also IBM International Customer Agreement, International Service Provider Agreement, and IBM Global Services International Agreement.
IBM International Customer Agreement (IIICA)		One of four master agreements—specifically for hardware, software, and services—used for multinational projects. See also IBM International Agreement for Services, International Service Provider Agreement, and IBM Global Services International Agreement.
IBM Worldwide Project Management Method		A methodology which defines the way IBM manages projects. It is a model for project management activities. Abbreviated WWPMM.
IBM Project Management Tool Suite		A collection of software applications used to plan, schedule, manage and execute projects. (May be called PM Tool Suite).
ICA		intercompany agreement
ICA		IBM Customer Agreement
ICM		Intellectual Capital Management
ID		Identification or identifier
Ideal process		An IBM process used by Global Services to build a team and reduce the expense and time necessary to respond to a multinational opportunity.
Identify your strengths and weaknesses in communicating with others		When behavior produces or contributes to positive outcomes, it is considered a strength. When it produces or causes negative outcomes, it is considered a weakness. A weakness in some cases may be an overdone strength.
IDIQ		indefinite delivery, indefinite quantity
IFB		Invitation for Bid
IGN		IBM Global Network
IGSI		IBM Global Services International Agreement
IIAS		IBM's International Agreement for Services
IIICA		IBM International Customer Agreement
ILFA		International Lease and Finance Agreement
Impersonal		Having no personal reference or connection. Showing no emotion.
In-scope request		A request, by an authorized person, against a specialized type of activity which is budgeted as part of a project, and for which work is performed on request within the boundaries and procedures defined in the agreement. This type of activity usually occurs in the context of a program. Examples of that type of activity may be to do predetermined technology updates on request for a given population during a specified period of time, or to provide an average of x person days per week for m months to handle corrective actions on request within a given scope.
Inclusion		Being part of; being involved.

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Glossary

Term	National Language Term	Definition
Income		The amount remaining after all revenues are accounted for and all costs and expenses are deducted. Also called profit, net income, net profit.
Indemnification		In corporate law, the practice by which corporations pay expenses of officers or directors who are named as defendants in litigation related to corporate affairs. In some instances, corporations may indemnify officers and directors for fines, judgments, or amounts paid in settlement as well as expenses.
Indemnity		Compensation for loss or damage.
Individual status report		A report prepared by the individual team member which documents the status of work items, effort expended, planned absences and any comments. This is a WWPMM work product.
Informational work product		One of two types of technical work product defined in WWPMM. Refers to those work products that describe or contribute to the creation of operational work products.
Infringement		Invasion of the rights secured by patents and copyrights, and trademarks.
Inspection		Activities such as measuring, examining, and testing undertaken to determine whether results conform to requirements (ISO 8402, PMBOK®).
Integrated Product Development (IPD)		One of two major corporate business processes (with Customer Relationship Management) within IBM. IPD defines how offerings are developed and delivered by IBM.
Intercompany agreement (ICA)		A document that describes the arrangement between two local IBM units—companies or subsidiaries—about how one unit will provide staff, goods, or services to the other unit.
Interests have breadth		Characteristic of an extravert; interested and concerned about a wide range of areas rather than being interested in a few areas.
Internal agreement		(See agreement)
Internal risks		Risks the project team can control or influence (PMBOK® 11.1).
International Operations Support Center (IOSC)		A Global Services organization, based in Paris, that supports service professionals working with international clients.
International Service Provider Agreement (ISPA)		One of four master agreements—specifically for network services only—used for multinational projects. See also IBM International Customer Agreement, IBM International Agreement for Services, and IBM Global Services International Agreement.
Introversion		Focusing attention and energy inside oneself.
Intuitive types		Persons who gather by looking for possibilities, meanings, and relationships between and among things.
Invitation for bid (IFB)		Generally, this term is equivalent to "request for proposal." However, in some situations, it may have a narrower or more specific meaning.

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Glossary

Term	National Language Term	Definition
Invitation to tender (ITT)		Generally, this term is equivalent to "request for proposal." However, in some situations, it may have a narrower or more specific meaning.
IOSC		International Operations Support Center
IPD		Integrated Product Development
IPF		Integrated Project File
IPLA		International Program License Agreement
IPMT		Integrated portfolio management team
IPMT		Integrated project management team
IPS		IBM Procurement System
IRC		Internal Revenue Code
ISC		IBM Subcontractor Agreement
ISO		International Standards Organization
ISPA		International Service Provider Agreement
ISSC		IBM Integrated Systems Solutions Corporation
Issue document		A document describing, in detail, the issue and a complete history of its progression through analysis and resolution. This is a WWPMM work product.
Issue		A generic term for a matter of concern on a project.
Issue log		The list identifying all issues that have occurred and require recording during the life of the project, the owner, due date, and status. This is a WWPMM PM Work Product.
ISU		Industry Solution Unit
IT		Information Technology
ITT		Invitation to tender
IVFA		International Volume Financing Agreement
IVO		IBM Volume Offering
J-P		Judging-Perceiving
JAD		Joint application design
Joint development agreement		A form of business alliance to design or develop a defined end-product within a specified time and cost under a formal agreement with another party.
Joint venture		A legal entity in the nature of a partnership engaged in the joint undertaking of a particular transaction for mutual profit. An association of persons or companies jointly undertaking some commercial enterprise; generally all contribute assets and share risks. A one-time grouping of two or more persons in a business undertaking. Unlike a partnership, a joint venture does not entail a continuing relationship among the parties.
Judging means deciding		Characteristic of a person who prefers to make a decision rather than postpone it.

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Term	National Language Term	Definition
lag		A modification of a <u>dependency</u> which directs a delay in the successor task. For example, in a finish-to-start dependency with a 10-day lag, the successor activity cannot start until ten days after the predecessor has finished. (See also <u>lead</u>)
LAN		local area network
late finish (LF)		In the critical path method, the latest possible point in time that an activity can be completed without delaying a specific milestone (usually the project finish date).
late start (LS)		In the critical path method, the latest possible point in time that an activity can begin without delaying a specific milestone (usually the project finish date).
latent defect		A defect that existed at the time of acceptance but could not be discovered by reasonable inspection or test.
LCC		life cycle cost
LDs		liquidated damages
lead		A modification of a <u>dependency</u> which allows an acceleration of the successor task. For example, in a finish-to-start dependency with a 10-day lead, the successor activity can start ten days before the predecessor has finished. May also be known as "negative lag." (See also <u>lag</u>)
leading		Establishing direction, aligning people, and motivating and inspiring (PMBOK® 2.4.1).
legal purpose		The underlying purpose of the contract must be allowed by law.
lessons learned		The causes of variances, the reasoning behind the corrective actions chosen, and other types of lessons learned documented so they become part of the historical database for the project and other projects of the performing organization (PMBOK® 4.3.3.3).
letter of authorization		A letter format agreement that authorizes contract performance to start for a limited scope and time while final negotiations are taking place. NOTE: Previously known as "letter of intent."
level of effort (LOE)		Support-type activity (e.g., vendor or customer liaison) that does not readily lend itself to measurement of discrete accomplishment. It is generally characterized by a uniform rate of activity over a specific period of time, e.g., 10% effort for three months.
LF		late finish
liabilities		All debts and moneys owed to others by a company.
liability		The condition of being responsible for a possible or actual loss.
license		The permission by competent authority to do an act, which, without such permission, would be illegal, a trespass, a tort, or otherwise not allowable. Certificate or the document itself which gives permission. Permission to do a particular thing, to exercise a certain privilege, or to carry on a particular business or to pursue a certain occupation.

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Glossary

Term	National Language Term	Definition
lien		A claim, encumbrance, or charge on property for payment of some debt, obligation, or duty. Right or claim against some interest in property created by law as an incident of contract.
life-cycle costing		The concept of including acquisition, operating, and disposal costs when evaluating various alternatives.
limitation of liability		The monetary limit placed on the liability.
line manager		(See <u>functional manager</u>)
litigation		The act of carrying on a suit in a court of law.
LOA		Letter of Authorization
LOE		level of effort
logical relationship		(See <u>precedence relationship</u>)
LOI		letter of intent
LS		late start
magnitude		Greatness in size or measurable quantity.
maintenance		The act of applying updates, changes, and/or fixes to a product.
make-or-buy analysis		Determining whether a particular product can be produced cost-effectively by the performing organization (PMBOK® 12.1.2.1).
margin		The actual percentage earned on a project.
markup		The factor applied to get from cost to final price.
matrix organizational structure		PM shares responsibility with functional managers to assign priorities and direct the work of the people assigned to the project; a blend of functional and projectized (PMBOK® 2.3.3).
MBTI		Myers-Briggs Type Indicator
meeting documentation		Resources used to conduct and record meetings, including agendas and minutes. <i>This is a WWPM PM Work Product.</i>
memorandum of understanding		The documentation of mutually agreed-to statement of facts, intentions, procedures, and parameters for future actions and matters of coordination. Also, the documentation of mutual understanding of an issue by two or more parties.
mentor		A person who serves as teacher or coach; an advisor.
MFO		must finish on
milestone		A significant event in the project or sub-project, such as a major decision, completion of a <u>deliverable</u> , or meeting of a major dependency (like completion of a project phase). NOTE: Milestone is commonly used to refer to both the event itself and the point in time at which the event is scheduled to happen.
milestones list		The list identifying project milestones, due date, and status, including history. <i>This is a WWPM PM Work Product.</i>
mitigation		To make less severe. Alleviation, reduction, abatement, or diminution of a penalty or punishment by law.

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Glossary

Term	National Language Term	Definition
model agreement		A generic agreement containing the base definitions and terms and conditions, which can be used as a base for generation of the final agreement.
monopoly		A form of market structure in which one or only a few firms dominate the total sales of a product or service.
Monte Carlo technique		Risk evaluation method using simulation to exercise the frequency distribution "thousands of times." The cumulative frequency distribution will identify the probability of achieving a particular date (task or project) or cost (task or project) within a probability range.
MPA		Master Procurement Agreement
MSAR		Market Segment Analysis Report
MSO		must start on
mutual consideration		Common to both parties. Interchangeable; reciprocal; each acting in return or correspondence to the other.
mutual responsibilities		See mutual consideration where responsibilities are common to both.
M&D		manufacturing and development
near-critical path		Path through the network with low total float.
need		Something useful, required, desired, or lacking from the perspective of the sponsor. In contrast to <u>project requirements</u> which are formally documented, needs are typically stated informally.
negotiating		Conferring with others in order to come to terms or reach an agreement (PMBOK® 2.4.3).
net earnings before taxes (NEBT)		A method of calculating earnings that does not consider the effect of taxes on the earnings.
net present value (NPV)		Today's time value of money as it relates to a specific business consideration.
NGT		Nominal Group Technique
NLRA		National Labor Relations Act
NLS		National Language Support
no bid		The act of not bidding. See bid.
non-conformity		An aspect of a <u>deliverable</u> that does not meet one or more <u>acceptance criteria</u> . In contrast to <u>defect</u> , a non-conformity can be viewed as a failure to meet certain <u>requirements</u> or <u>specifications</u> . NOTE: If an aspect of a deliverable is ambiguous with regard to conformity or lack thereof, it is called a <u>controversial defect</u> .
nonperformance		Failure of a party to meet an expectation or a contractual commitment.
non-solicitation of employees		A special term and condition sometimes added to IBM contracts that describes a joint agreement not to recruit employees of the other party during the life of the contract and, in some cases, for a specified period thereafter. It also includes that the buyer/seller employees who independently make employment applications to IBM will be given the same consideration as any other applicant.

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Glossary

Term	National Language Term	Definition
normalized risk score		Unsophisticated technique that uses the severity scores of the Top 10 risk events plus the sum of the scores; the normalized risk score then equals risk score (sum of severity ratings) times 10, divided by the number of risk events.
NPV		net present value
obligation		That which a person is bound to do or forbear. An undertaking to perform. That which constitutes a legal or moral duty and which renders a person liable.
OBS		organizational breakdown structure
OCE		original cost estimate
OEM		original equipment manufacturer
offer		An unequivocal and intentionally communicated statement of proposed terms made to another party. A proposal is normally a written offer by a seller describing its offering terms.
offering		An element, or integrated set of elements (hardware, software, and services) designed to satisfy the wants and needs of current and/or prospective customers. The <u>deliverables</u> for the offering may include consulting, intellectual property, software, hardware, services, training, financing, maintenance, and so on. 'Offering' refers to the hardware, software, or services elements, while 'solution' refers to the application of an offering in a specific customer environment.
offering proposal		The framework and <u>work product</u> for responding to requests under the IPD process for new hardware, software, and services offerings. Comprises an executive summary, market segment analysis and offering market strategy, offering definition and overview, offering plan highlights, integrated project schedule and resource plan, financial assessment, risk assessment, and recommendations. - An Initial Offering Proposal is prepared during the 'Concept' phase of IPD. - A Final Offering Proposal is prepared during the 'Plan' phase of IPD and, when combined with the <u>plan contract</u>, becomes part of an <u>agreement</u>.
office and material		The resources, consisting of physical space, hardware, software, materials, or equipment of any kind, used during the <u>project</u> by an individual. This is in contrast to <u>technical environment</u> , which includes resources associated with the project as a whole.
operational schedule		A schedule that organizes the day-to-day work of individuals assigned to the same <u>project organizational unit</u> . <i>This is a WWPMM PM Work Product.</i>
operational work product		One of two types of <u>technical work product</u> defined in WWPMM. Refers to those work products that can be implemented, including hardware, software, services, financing, and so on. These work products constitute the <u>solution</u> .

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Glossary

Term	National Language Term	Definition
operator		A person who manages to achieve his or her goals.
order of precedence		A statement in a contract that specifies which provision should control if the contract or related contracts or agreements contain conflicting or inconsistent provisions.
organizational breakdown structure (OBS)		A depiction of the sub-projects and project organizational units, describing: - relationships between the sub-projects and project organizational units, - reporting relationships between project organizational units, - team structure of the project organizational units, and - reporting relationships with the deliver organization and with the other performing organizations, including subcontractors. This is a WWPMM PM Work Product.
organizational unit		(See project organizational unit)
OS		operating system
OSF		open systems function
overlap		A modification of a dependency which allows a portion of two tasks to occur simultaneously. (See also lag and lead)
owners' equity		The interest or stake the owners have in a company; the sum of the owners' original investment plus the accumulation of all profits that have been retained (not distributed to stockholders) in the company since inception.
ownership		The right to reuse (i.e., remarket, modify, enhance, and prepare derivative works based on) all material prepared under a buyer's direction and control. In IBM, there are two types of materials: Type I—Client owns and IBM has broad rights, as well as a copy of the materials. Type II—IBM or supplier owns and the client has broad rights for internal use only.
P		predecessor
PA		participation agreement
patent		A government grant giving an inventor the exclusive right to make or sell his or her invention for a limited period of time.
payment options		The different ways in which payment will be received. For example, all up front of the agreement; all at the end of the agreement; in installments during the life of the agreement; or in an other agreed manner.
payment terms		When, where, and how payment should be made upon receipt of an invoice.
PBC		personal business commitment
PBS		product breakdown structure
PC		percent complete
PBC		project control book
PCR		project change request

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Glossary

Term	National Language Term	Definition
PD		Project Definition PM Domain
PDM		precedence diagramming method
PDR		Project Definition Report
PDT		project development team
penalties		Compensation to be paid in case of nonperformance of the conditions of a contract.
percent complete		An assessment, expressed as a percent of the total work scheduled, of the amount of work which has been completed for a project, sub-project, work product, or work item. (See also earned value estimate to complete)
perceptions		Awareness, comprehension; insight or intuition; discernment. To take notice of; observe to achieve understanding.
performance bond		A monetary guarantee that the contractor will perform according to contract terms. NOTE: The amount of the performance bond for IBM contracts with its clients should never exceed the value of the contract.
performance reporting		Collecting and disseminating performance information to provide stakeholders with information about how resources are being used to achieve project objectives (PMBOK® 10.3).
performance reviews		Meetings held to assess project status or progress (PMBOK® 10.3.2.1).
performing organization		The organization to which responsibility for the project or for a sub-project has been delegated. Performing organizations can be internal organizations to which work is assigned, subcontractors, or even a part of the sponsor's organization. Also, more than one performing organization on a project can belong to the same enterprise; similarly, a performing organization can be involved in more than one sub-project. (See also delivery organization)
permanent establishment		Inadvertently creating a taxable presence in another country.
plan		A description of the means for achieving an objective. NOTE: WWPMM uses the term "plan" as a generic term, and the term "schedule" for a plan that is primarily focused on time-related items. (See also schedule, work plans)
plan contract		In IPD, a document, usually a single page, between the sponsor (IPMT) and project team (PDT) that covers the scope and metrics of the project that is described in the offering proposal.
Planner		As it refers to the Planner component in the IBM PM Tool Suite: A software tool (part of the PM Tool Suite) that provides an intuitive way to define, plan, and estimate a project. The data then can be transferred to a project scheduling tool for scheduling and tracking.

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Glossary

Term	National Language Term	Definition
planning framework		A plan that partitions the work to be done on the project based on who will do the work, rather than groupings of related tasks, and is used as part of early project definition activities.
PLU		price lookup
PM		project management
PM		project manager
PMBOK		Project Management Body of Knowledge, short for "A Guide to the Project Management Body of Knowledge"
PMI®		Project Management Institute
PMM		IBM Project Management Method
PMM2		Abbreviation previously used to refer to WWPMM
PM/COE		Project Management Center of Excellence
PM Tool Suite		A collection of software applications used to plan, schedule, manage and execute projects. (May be called IBM Project Management Tool Suite.)
policy		Corporate, business unit, or constituency business rules that must be adhered to by a project.
portfolio		The set of hardware, software, or services offerings, solutions, or engagements within a business area that addresses a market segment. Portfolio management is outside the scope of WWPMM.
portfolio management		Management of a portfolio where coordination, data collection, reporting, review and analysis are required to achieve a common business objective. Portfolio management is outside the scope of WWPMM but portfolio managers should have project management skills even though this is not their core job.
postaward		The time frame after a contract has been awarded. The activities of the buyer and the seller after a contract has been awarded. Phase 3 of the contract management process.
POU		project organizational unit
PPA		Production Procurement Agreement
PPD		Product and Process Description
pre-sales activity		The marketing activities that determine whether you should proceed with a bid.
preaward		The time frame before a contract is awarded. The activities of the buyer and the seller before a contract is awarded. Phase 1 of the contract management process.

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Glossary

Term	National Language Term	Definition
precedence relationship		A dependency between two project activities, or between a project activity and a milestone. The four possible types of precedence relationships are: • Finish-to-start; the "from" activity must finish before the "to" activity can start. • Finish-to-finish; the "from" activity must finish before the "to" activity can finish. • Start-to-start; the "from" activity must start before the "to" activity can start. • Start-to-finish; the "from" activity must start before the "to" activity can finish.
precedence diagramming method (PDM)		Method of constructing a project network diagram using nodes to represent activities and connecting them with arrows that show dependencies; also called activity-on-node.
predicting potential problem areas		Forecasting where difficulties may arise.
present value (PV)		Value of a payment or a stream of payment amount due and payable at some specified future date, discounted by a compound interest rate or discount rate. Also called the "time value of money."
prime contractor		The principal seller performing under the contract.
principal		The source of authority.
privity		Knowledge shared between two parties regarding a private matter usually implying consent or concurrence. NOTE: When two parties sign an agreement, there is privity between them.
procedure		A standardized way to perform an activity. (ISO 8402) The description of a procedure usually includes: • What is to be done. • When it is to be done. • Who is to do it. • How it is to be done. • What must be recorded.
process		A set of interrelated resources and activities which transform inputs into outputs with the aim of adding value. (ISO 8402) In WWPMM, a process is a sequence of interrelated steps which collectively achieve a single objective. They are organized within related groups known as PM domains or PM sub-domains.
procurement planning		Identifying which project needs can best be met by procuring products or services outside the project organization (PMBOK® 12.1).

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Glossary

Term	National Language Term	Definition
product breakdown structure (PBS)		A hierarchical decomposition of operational work products into components. Each descending level of this decomposition represents an increasingly granular view of the constituent parts of the components and interfaces of the product. The product breakdown structure focuses on what must be produced and complements the work breakdown structure, which focuses on activities (i.e., what must be done). <i>This is a WWPMM PM Work Product.</i>
product breakdown structure element type		A classification of product breakdown structure elements such that elements of the same type are assumed to have the same attributes (e.g., a complex online program), to be built using the same set of tasks, and to require the same amount of effort from the same resource categories. To assure appropriate classification, it is often necessary to specify a type in considerable detail.
program		A group of related projects and other activities managed in a coordinated way to achieve a common long-term objective. (See also <i>portfolio</i>)
program management		The holistic application of project management, business and customer relationship knowledge, skills, tools, and techniques in order to meet the strategic goals of the program.
progress reporting		Describing what the project team has accomplished (PMBOK® 10.3).
project		WWPMM supports both of the following common and equivalent definitions of a project: (1) A temporary endeavor undertaken to produce a unique product or service. Operations (such as manufacturing) and projects differ primarily in that operations are ongoing and repetitive, while projects are temporary and unique. (PMI®) (2) A unique process, consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements, including the constraints of time, cost, and resources. (ISO 10006)
project charter		A document issued by or created on behalf of the sponsor to describe the project's objectives. <i>This is a WWPMM PM Work Product.</i>
project closeout		Process that provides for acceptance of the project by the sponsor and includes completion of project records, final revision and issuance of documentation to reflect completion criteria, and retention of essential project documentation. (See <i>communications management</i>)
project communications management		

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Glossary

Term	National Language Term	Definition
project control		The processes required to define and execute appropriate actions to ensure the success of the project.
project control book		The organized folder, or set of folders, where the agreements, plans, procedures, and records supporting the project management system are kept, referenced, and cross-referenced.
project cost management		(See <i>project definition, work plan management, project tracking</i>)
project decision structure		One or more interrelated boards responsible for making specific decisions about the direction, management, and results of a project. The decision structure includes a specification of participants, authorities, responsibilities, and procedures. In general, the decision structure should include management representatives from both the sponsor and the delivery organization. <i>This is a WWPMM PM Work Product.</i>
project definition		The processes that are used to understand objectives and scope, shape the target solution (which may be larger than the current project) and shape the project to a level that allows planning activities.
project definition (document)		The document that describes the shape of the project and includes the objectives and scope, the stakeholders and proposed organization with responsibilities, and the major risks associated with the project. <i>This is a WWPMM PM Work Product.</i>
project evaluation report		A document, typically created at the end of the project or a major phase, that highlights key points to be gleaned from the project, including lessons learned, intellectual capital, and reusable materials. (See also <i>offering proposal</i>) <i>This is a WWPMM PM Work Product.</i>
project human resource management		(See <i>human resource management</i>)
project integration management		(See <i>project definition, work plan management, project tracking, change management</i>)
project life cycle		A collection of generally sequential project phases whose name and number are determined by the control needs of the organization or organizations involved in the project.
project management (PM)		(1) The application of knowledge, skills, tools, and techniques to project activities in order to meet or exceed stakeholder objectives and expectations from a project (from PMI®). (2) The planning, organizing, monitoring, and controlling of all aspects of the project in a continuous process to achieve its objectives (from ISO 10006).

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Glossary

Term	National Language Term	Definition
project management domain		A related set of <u>project management</u> processes (e.g., <u>supplier management</u>) generally focusing on the same set of project management data (e.g., supplier agreement). The content of the PM domains constitutes the <u>reference view</u> of WWPMM. NOTE: PM domains serve a purpose similar to that of the PMBOK® Guide's "knowledge areas." (See also <u>PM work pattern</u>)
project management plans		The set of the work plans, plus other plans such as <u>risk management plan</u> , <u>human resource plan</u> , <u>technical environment plan</u> , <u>project quality plan</u> , <u>communications management plan</u> , and so on.
project management process		(See <u>process</u>)
project management review		One of three types of <u>health reviews</u> defined in WWPMM. Specifically, a review that focuses on the planning and control aspects of the <u>project</u> , including: • Adequacy and accuracy of plans • Adequacy and accuracy of tracking and status reporting • Appropriateness of the project structure • Appropriateness of the staff assigned Project management reviews are typically performed by managers or executives and may be conducted by IBM or the sponsor.
project management schedule		A schedule that organizes groups of activities performed by <u>project organizational units</u> and allows project status and dependencies to be tracked. There may be several levels of project management schedule for a project; one for each of its <u>project organizational units</u> , reflecting the project's <u>organizational breakdown structure</u> . Project management schedules, especially for small projects or <u>sub-projects</u> , may also contain <u>operational schedule</u> details. This is a WWPMM PM Work Product.
project management sub-domain		A grouping of related <u>processes</u> within a <u>PM domain</u> .
project management system		The <u>project management plans</u> plus project procedures description and project management records, such as <u>issues</u> , <u>change requests</u> , <u>actions</u> , and so on.

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Glossary

Term	National Language Term	Definition
project management system summary		For each of the plans, procedures and records which document the project management system, the project management system summary typically provides a brief overview of the related work product and specifies the location of the full document or (particularly on small projects) replaces the work product entirely. This is a WWPMM work product.
project management team		For the <u>project</u> or for each <u>project organizational unit</u> , the member or members of the <u>project team</u> who are directly involved in project management activities. On some smaller projects, the members of the project management team may also do other work.
project management work pattern		A related set of <u>activities</u> the project manager should do or think about in order to meet a project management goal or respond to a typical situation. (See also <u>PM domain</u>)
project management work pattern group		A grouping of <u>PM work patterns</u> around related aspects of project management. The following groupings are currently used: • Defining • Planning • Starting • Monitoring • Handling exceptions • Handling deliveries • Closing
project management work pattern step		A specific <u>project management activity</u> that is part of a <u>PM work pattern</u> . In particular, a PM work pattern step may reference: • A complete <u>process</u> in a <u>PM domain</u>. • A set of processes from one or more PM domains. Each PM work pattern step has an associated <u>contextual description</u> .
project management work product		One of two types of <u>work products</u> defined in WWPMM. Refers to those work products related to the management of the project.
project management (PM)		Two definitions of project management are the application of knowledge, skills, tools, and techniques to project activities in order to meet or exceed stakeholder objectives and expectations from a project (from PMMB), and the planning, organizing, monitoring, and controlling of all aspects of the project in a continuous process to achieve its objectives (from ISO 10006).
project manager (PM)		An individual responsible for managing a project or sub-project.

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Glossary

Term	National Language Term	Definition
project network diagram		Any schematic display of the dependencies among project activities.
project organization		(See organizational breakdown structure)
project organizational unit (POU)		An entity (node) in the project's organizational breakdown structure that includes: - A project management team. - The other human resources needed to perform the work units allocated to the node. (See also sub-project)
project phase		A collection of logically related project activities, usually culminating in the attainment of a major milestone.
project plan		The collection of project management plans and the agreements with the sponsor and suppliers.
project plan execution		Carrying out the project plan by performing the activities included therein. (See also work management, deliverables management)
project planning		The development and maintenance of the project plan. (See also project definition)
project procedures description		Documentation of the procedures to be used on a project. It includes procedures related to: - The technical work itself (e.g., how reviews of deliverables must be conducted). - The project management of the work (e.g., how change requests must be handled). This is a WWPMM PM Work Product.
project quality management		(See quality management)
project quality plan		Documentation of the specific quality practices, resources and sequences of activities relevant to a particular product, project or contract. (ISO 8402) The project quality plan describes all the activities and other arrangements intended to achieve the planned level of quality for technical work products and project management work products. This is a WWPMM PM Work Product.
project quality system		(See quality system)

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Glossary

Term	National Language Term	Definition
project requirements		A formally documented description of those sponsor's needs that have to be addressed by the project. (See also specifications)
project scope management		(See project definition, change management)
project status report		A report, usually prepared monthly, by the top-level project manager for internal IBM management. It documents the status, progress, accomplishments, and forecasts for the end of the project. General categories include: health status summary; resources; earned value indicators; accomplishments; quality, issue, risk, change, and compliance incident summaries. This is a WWPMM work product.
project structure		(See organizational breakdown structure, project decision structure)
project team		The team responsible for the project, led by the project manager. The team may include members from different functions and/or internal or external suppliers.
project tracking		The processes required to collect and validate data, and to determine if the project is progressing according to plan.
project type		A classification of projects according to the nature of the overall or final deliverable produced, often related to major phases of the product or services development life cycle. (For example, a study, a development effort, or a solution deployment.)
project objectives		Quantifiable criteria that must be met for the project to be considered successful (PMBOK® 5.2.3.2).
projectized organizational structure		PM has full authority to assign priorities and direct the work of individuals assigned to the project (PMBOK® 2.3.3).
promotor		A person who helps bring about or further the growth or establishment of a project or an organization.
proprietary		Owned by a particular person; relating to a certain owner.
PRPQ		programming request for price quotation
PS		percent spent
PSE		Professional Services Engineering (in EMEA)
PSPL		product specification and price list
PSS		Product Support Services
PTI		pre-tax income
PV		present value
QA		quality assurance
QC		quality control
QCD		quality, cost, and delivery
QM		quality management PM domain
public domain		Material on which copyright or patent right has expired and that is available for unrestricted use. Property owned by a state or national government.
qualification process		Process of demonstrating whether a product or service is capable of meeting specified requirements. (From ISO 8402)

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Glossary

Term	National Language Term	Definition
quality		The totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied objectives. (From ISO 8402)
quality assurance (QA)		All the planned, systematic, and necessary actions to be implemented (and demonstrated, as needed) that will provide an adequate level of confidence that a product or service will satisfy given requirements for quality. (From ISO 8402) NOTE: WWPPM does not use this term to refer to an organizational entity, but rather to an overall process. (See also review , quality control)
quality audit		An audit of activities related to quality .
quality characteristics		The set of attributes of a product by which its quality is described and evaluated. (From ISO 8402)
quality contributors		Identified skills, materials, standards, tools, methods, techniques, and procedures that, when applied, will contribute to achieving specified quality criteria .
quality control (QC)		Operational techniques and activities that are used to fulfill requirements for quality. Those operational techniques and activities aimed both at monitoring a process and at eliminating causes of unsatisfactory performance at all stages of the quality loop in order to result in economic effectiveness. (From ISO 8402) (See also review , quality assurance)
quality criteria		The set of rules and conditions used to decide whether an activity or a work product meets the requirements for a defined set of quality characteristics . (From ISO 8402)
quality management		The processes required to ensure that the project will satisfy the objectives for which it was undertaken.
quality plan		(See project quality plan)
quality planning		Developing the project quality plan and/or the project procedures description for a project.
quality system		The organizational structure, responsibilities, procedures, processes, and resources for implementing quality management. (From ISO) Organizations may define quality systems at organizational levels above the project. The project quality system is described by the combination of the project quality plan and the project procedures description .
RAD		rapid application development
RAM		responsibility assignment matrix
RDM		resource deployment manager
reciprocity		A mutual exchange of trade or other concessions or privileges between two parties.

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Glossary

Term	National Language Term	Definition
reference document		Any document that is included by reference in an agreement , such as: • Request for proposal. • A requirements document. • Specifications. • Standards.
reference view		A view of WWPPM that is intended to be a complete guide to all aspects of project management for the practicing project manager, similar to an encyclopedia. A project manager using this view will typically reference a particular topic or aspect of project management in detail. (See also PM domain)
relationships		Dependencies that exist between activities.
remedies		Legal actions for enforcing a right or compensating a wrong.
request for information (RFI)		A document issued to identify the level of interest of potential suppliers and to collect input which may be used in creation of a request for proposal .
request for proposal (RFP)		A type of bid document used to solicit proposals from prospective sellers of products or services. In some situations, it may have a narrower or more specific meaning.
request for quotation (RFQ)		Generally, this term is equivalent to request for proposal . However, in some situations, it may have a narrower or more specific meaning.
request for tender (RFT)		See request for proposal (RFP) . In non-US countries, it is referred as request for tender (RFT) .
Requirements		(See project requirements).
Reserve		Provision in the project plan to mitigate cost and/or schedule risk (PMBOK® 11.3.3.4).
resource deployment manager (RDM)		A role in the IBM Global Services which coordinates the allocation of technical personnel to projects.
resource planning		Determining what resources (people, equipment, materials) are needed in what quantities to perform project activities. (See also human resource management , technical environment management)
resource leveling		A form of network analysis in which scheduling decisions (start and finish dates) are driven by resource management concerns (PMBOK® 6.4.2.4).
resource requirements		Description of the types of resources required and in what quantities for each element of the WBS (PMBOK® 7.1.3.1).
return on assets (ROA)		Net income divided by total assets. A key ratio of profitability.
return on investment (ROI)		Net income divided by the total investment. Similar to ROE (return on equity): "Net income divided by total equity."

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Glossary

Term	National Language Term	Definition
return on sales (ROS)		Net income divided by the total sales.
revenue		The total funds received from the sales of products or services.
review		A systematic examination of some or all aspects of the project, often referred to as a project status review. In WWPM, a number of reviews are described. Three of the primary types are described: Health reviews A type of review that focuses on a project's condition or ability to meet stated objectives, and on necessary corrective actions. Compliance reviews A review intended to ensure that policies and procedures are being followed. Deliverable reviews A review of a deliverable or key component before releasing it to the sponsor to ensure that no open items remain and that it is ready to be delivered.
reward and recognition systems		Formal management actions that promote or reinforce desired behavior (PMBOK® 9.3.2.3).
RFI		request for information
RFP		request for proposal
RFQ		request for quotation
RFT		request for tender
rights		Claims, power, or privileges to which a party is justly entitled; can be legally enforceable.
rights in data		Synonymous with ownership as it applies to materials that are considered Intellectual property, including code, program listings, reports, documentation, programming tools, drawings, and similar works; it does not include licensed programs.
risk		A potential event or future situation that may adversely affect the project.
risk consequence		The expected result of a <u>risk occurrence</u> .
risk contingency plan		The strategy, activities, and budget that have been planned for responding to a particular risk, if and when the risk occurs. Also, the collection of such plans for multiple risks.
risk contingency planning		One of the two types of <u>risk containment</u> defined in WWPM. The development of a <u>risk contingency plan</u> for a particular or for multiple risks.
risk contingency reserve		A reserve that is held inside a project's cost baseline and that can be used to address future situations affecting a project's costs or schedules.

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Glossary

Term	National Language Term	Definition
risk containment		One of the five types of risk response defined in WWPM. There are two types of risk containment defined in WWPM: Risk mitigation. Taking steps to affect <u>situational factors</u> in order to lessen risk by lowering the probability of a <u>risk occurrence</u> or reducing its effect should it occur. Risk contingency planning. The development of a <u>risk contingency plan</u> for a particular or for multiple risks.
risk definition		Documents the <u>risk description</u> and <u>risk history</u> of events for each risk identified within the project. <i>This is a WWPM PM Work Product.</i>
risk description		Defines each <u>risk</u> in terms of its characteristics and includes a description of the <u>situational factor</u> that may lead to the loss as well as a description of the loss (or <u>risk consequence</u>).
risk event		(See <u>risk occurrence</u>)
risk factor		A <u>situational factor</u> that has been identified as leading to a <u>risk</u> .
risk history		Provides a chronology of key events and activities related to managing the risk throughout the life of the project.
risk management		The <u>processes</u> concerned with identifying, analyzing, and responding to project <u>risk</u> .
risk management plan		The collection of <u>risk responses</u> for identified project <u>risks</u>. <i>This is a WWPM PM Work Product.</i>
risk management reserve		A reserve that is held outside a project's cost baseline and that can be used to address future situations affecting a project's costs or schedules. Using management reserves is an alternative to increasing the price of the project to the sponsor. Generally, establishing and using management reserves is controlled by policy in the <u>delivery organization</u> .
risk mitigation		One of the two types of <u>risk containment</u> defined in WWPM. Taking steps to affect <u>situational factors</u> in order to lessen risk by lowering the probability of a <u>risk occurrence</u> or reducing its effect should it occur.
risk occurrence		Transformation of a <u>risk</u> from a potential to an actual event.

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Glossary

Term	National Language Term	Definition
risk reserve		WWPMM distinguishes between two types of reserve, which are funds set aside to respond to risks. Risk management reserve. A reserve that is held outside a project's cost baseline and that can be used to address future situations affecting a project's costs or schedules. Using management reserves is an alternative to increasing the price of the project to the sponsor. Generally, establishing and using management reserves is controlled by policy in the delivery organization. Risk contingency reserve. A reserve that is held inside a project's cost baseline and that can be used to address future situations affecting a project's costs or schedules.
risk response		An approach to dealing with an identified risk. WWPMM defines five types of response: Acceptance. Accepting the consequences if a risk occurrence without further action but continuing to observe for increased likelihood of occurrence. Risk transfer. Transferring some or all of the responsibility for dealing with a risk to the sponsor or a supplier. Use insurance. Where the identified risk is covered by an insurance arrangement, use this to cover the cost of the risk occurrence. Use risk reserve. Deciding to use monies set aside as risk management reserve or risk contingency reserve. Risk containment. There are two types of risk containment defined in WWPMM: Risk contingency planning. The development of a risk contingency plan for a particular or for multiple risks Risk mitigation. Taking steps to affect situational factors in order to lessen risk by lowering the probability of a risk occurrence or reducing its effect should it occur.
risk transfer		One of the five types of risk responses defined in the WWPMM. Risk transfer. Transferring some or all of the responsibility for dealing with a risk to the sponsor or a supplier.
RM		risk management PM domain
ROA		return on assets
ROI		return on investment
ROS		return on sales
role and responsibility assignments		Assigning roles (who does what) and responsibilities (who decides what) to appropriate project stakeholders; uses a responsibility assignment matrix (RAM) (PMBOK® 8.1.3.1).

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Glossary

Term	National Language Term	Definition
royalties		A share of proceeds paid to a proprietor, author, or inventor by those doing business under some right belonging to that proprietor, author, or inventor.
SAM		Sponsor Agreement Management PM Domain
S-N		Sensing-Intuition
sale		A contract between two parties, called, respectively, the "seller" (or vendor) and the "buyer" (or purchaser), by which the former, in consideration of the payment or promise of payment of a certain price in money, transfers to the latter the title and the possession of property.
schedule		Any plan structured on a time dimension, including cost schedule, project management schedule, operational schedule, staff schedule. (See also <u>plan</u> , <u>management schedule</u> , <u>operational schedule</u>)
schedule performance index (SPI)		The ratio of work performed to work scheduled (BCWP/BCWS). (See also <u>earned value</u>)
schedule variance (SV)		1. Any difference between the scheduled completion of an activity and the actual completion of that activity. 2. In earned value, BCWP less BCWS.
scope		The boundaries for inclusions and exclusions that define the depth and breadth of the project. Areas of consideration might include: - Functionality (e.g., which processor is included in a systems offering) - Organization (e.g., parts of the sponsor or customer's organization that will be affected) - Life Cycle Phases (e.g., concept phase only or specification phase plus development) - Deliverables (e.g., products included, services offerings excluded) - Geographic areas (e.g., worldwide or Asia-Pacific only)
SDD		solution design and delivery
SDI		strength deployment inventory
SDRL		subcontractor/supplier data requirement list
SEI		Software Engineering Institute
seller		Vendor; one who has contracted to sell property or goods.
seller's rights and duties		Includes such things as: the right to expect that the buyer will meet the obligations stated in the contract including payment; and the right to take corrective action including litigation against the buyer if the buyer does not meet its contractual commitments and the duty to explain how the buyer's expectations will be satisfied.
selling, general and administrative expenses (SG&A)		Selling expenses result from a company's efforts to make sales, such as sales commissions. General and administrative expenses are expenses incurred to support the operations of a company, such as utilities, rent, and so forth.

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Glossary

Term	National Language Term	Definition
separation of duties		As used in the IBM contract management process, it means that not one single individual has responsibility for more than one of the following activities: specifying the work to be done by a supplier; selecting the supplier; validating the receipt of services or materials from the supplier (acceptance); or processing supplier invoices for payment.
SGA		selling, general, and administrative expenses
SI		systems integration
SITO		Systems Integration Technical Operations (in IBM Japan)
side letter		One of our key business conduct rules is that we do not accept side letters. "Side letter" in this respect means a letter whereby IBM would accept additional commitments or deviations not covered by approved contractual documents signed between the parties. The acceptance of a "side letter" could be cause for job termination.
single source		One source among others in a competitive marketplace that, for justifiable reason, is found to be most worthy to receive a contract award.
situation analysis document		A document which is used when there is a need to investigate a potentially troubled situation and identify the appropriate actions to resolve it. This document records the situation analysis preparation and the resulting report. This is a WWPMM work product.
situational factors		Aspects of the context of the project and target solution that may affect the project. Often referred to as opportunities and threats.
SI/AD		System Integration and Application Development
SLA		service level agreement
slack		See float
SLOC		source lines of code
SLB		support line services
SNET		start no earlier than
SNLT		start no later than
sole source		The only source in a marketplace that offers a desired product or service. There are no other choices.
solicitation		Asking, or a request, for something, usually goods or services.
solicitation planning		It is the plan that establishes the strategy and approach for the procurement of supplier product and/or services.
solution		(1) The answer to a problem. (2) The ultimate outcome of the project or program that will satisfy the sponsor's objectives. (3) An offering that is purchased by a customer in order to solve a specific business problem. 'Offering' refers to the general hardware, software, or services, while 'solution' refers to its application in a specific customer environment. (IPD) (See also needs, requirements, specifications, project type)
SOMT		Service Offering Management Team
SOW		statement of work
SPAN		strategic position analysis
SPI		schedule performance index
SS		start-start

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Current version can be found at <http://w3-3.ibm.com/transom/project?education/preclass/reference.html>

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Glossary

Term	National Language Term	Definition
SSP		system service programs
source selection		The process followed in deciding whether to use single/sole source or competitive source of suppliers.
specification		A detailed description of features that are to be implemented. (See also needs, project requirements, solution)
sponsor		An individual or an organization who has the authority to perform, delegate, or ensure completion of the following project commitments: - Formalization of an agreement with the delivery organization. - Approval to proceed with the start of the project or of a project phase. - Acceptance of the deliverables from the project. - Spending for the cost/price of the project as specified in the agreement. The sponsor may be internal (e.g., an IPMT) or external (e.g., a customer or a commissioning body) to IBM.
sponsor agreement management		The processes necessary to build the agreement, present it to the sponsor and negotiate changes, and at the end of the project, close out the agreement.
staff list		A list that contains basic information about each team member such as identification categories, information about the sourcing organization, and cost-related historical items. This is a WWPMM work product.
staff provider		A supplier who provides people to a project but does not manage their work.
staff schedule		Description of when and which staff members or skills are or will be brought onto the project and released by the project. (See also human resource plan) This is a WWPMM PM Work Product.
stakeholder		Individuals and organizations who are involved in or may be affected by project activities.
statement of work (SOW)		A description of products and services to be supplied to the sponsor by the delivery organization, or to the delivery organization by a supplier when these organizations are separate business entities or companies. (See also agreement, deliverables)

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Glossary

Term	National Language Term	Definition
status report		Scheduled report that documents accomplishments, records current state vs. plan, forecasts future state and progress, and describes significant risks and issues. There are four types of status reports: - Individual status report - Sub-project/team status report - Project status report - Subcontractor status report Project status reports may be created for IBM management, the sponsor, and/or the customer. Each of these reports is a WWPMM PM Work Product.
status reporting		Collecting and disseminating information about the state of the project or a portion of the project and its performance against plans.
subcontract		A contract between a buyer and a seller in which the products or services being acquired are for use in a prime contract.
subcontractor		A supplier who creates or customizes a work product for a project under the supervision of the delivery organization.
subcontractor status report		A report, prepared by the subcontractor for the project manager, which addresses the status of the sub-project for which the subcontractor is responsible. The format is identical to that of the project status report. This is a WWPMM work product.
sub-domain		(See PM sub-domain)
sub-project		A set of work units assigned to a single project organizational unit in order to divide the project into more manageable components.
subproject or team status report		A report created by the project manager or team leader for each sub-project or team and provided to the top-level project manager. The format is the same as that of the project status report.
Sum		Supplier Management PM Domain
supplier		A provider of products and/or services to a project. WWPMM categorizes suppliers as: - Subcontractors. A supplier who creates or customizes a work product for a project under the supervision of the delivery organization. - Staff providers. A supplier who provides people to a project but does not manage their work. - Vendor. A supplier who provides standard ("off the shelf") products or services to a project. There are no restrictions on which organizations may be suppliers. A supplier may be internal to the delivery organization; similarly, the sponsor may be a supplier.

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Glossary

Term	National Language Term	Definition
supplier agreement		A formalization of mutual commitments between the delivery organization and a supplier. (See also agreement, supplier, agreement change authorization)
supplier evaluation		Analyzing potential suppliers for candidates who could meet the needs of the project. (See also supplier selection)
supplier management		The processes required to acquire goods and services from outside the delivery organization.
supplier review		An examination of supplier activities to assess compliance with the agreement, policies, procedures, and plans.
supplier selection report		Documentation resulting from choosing a supplier based on a completed supplier evaluation. This is a WWPMM PM Work Product.
SV		schedule variance
SWOT		strengths, weaknesses, opportunities, threats
T-F		Thinking-Feeling
TAT		turn-around time
TA		transaction attachment
TC		Tracking and Control PM Domain
TCCPI		to complete cost performance index
TCPI		to complete performance index
TCSPI		to complete schedule performance index
target solution		The solution that is developed in response to a sponsor request for assistance in addressing a business need and that will be implemented by the delivery organization, based on one or several agreements. The target solution might be all or only part of the solution for the business need. The target solution may be wholly or partially implemented by the project.
task		A sub-division or portion of an activity. This term is often used in WWPMM to describe the lowest level of a work breakdown structure.
team development		Enhancing the ability of stakeholders to contribute as individuals as well as enhancing the ability of the team to function as a team.
team predictions		What the team believes will happen.
Team building activities		Management and individual actions taken specifically and primarily to improve team performance (PMBOK® 9.3.2.1).
team charter		A document which contains the ground rules for the operation of the project team, including the shared performance objectives, expectations about team behaviors, rules of engagement, and key roles and responsibilities. This is a WWPMM work product.
teaming agreement		The exclusive relationship between parties to provide a unique offering where contributions of individual team members are complementary but are not separable and it dictates a single-source procurement/solicitation.

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Glossary

Term	National Language Term	Definition
technical environment		The collection of hardware, software (e.g. case tools), network, and equipment of any kind that are shared by the <u>project team</u> and used in support of a <u>project</u> or <u>sub-project</u> . This is in contrast to <u>office and material</u> , which includes resources associated with individuals.
technical environment assessment		A document which contains information about the effectiveness of the technical environment and plans for improvement. This is a WWPMM work product.
technical environment management		The processes required to understand, plan, acquire, install, and remove the technical environment.
technical environment plan		A description of the required <u>technical environment</u> , the plan and schedule used to build and/or acquire it, the plan and schedule to make it operational, and the plan to manage it. <i>This is a WWPMM PM Work Product.</i>
technical review		One of three types of <u>health review</u> defined in WWPMM. A type of <u>review</u> that focuses on the technical aspects of the <u>project</u> , including work products and deliverables, covering areas such as traceability of <u>requirements</u> , architecture, technology competitiveness, and so on. (See also <u>health review</u>)
technical work product		A verifiable technical outcome produced during the course of the project. Technical work products are one of two types of <u>work products</u> defined in WWPMM are further divided into two types: - Operational work products. Those that can be implemented, including hardware, software, services, financing, and so on. These work products constitute the solution. - Informational work products. Those that describe or contribute to the creation of operational deliverables (e.g., interview reports or study results). (See <u>project management work product</u>)
TEM		Technical Environment Management PM Domain
temperament defined		Relates to observable behaviors and core values that help shape one's leadership and management styles.
termination		Clause in a contract that defines the circumstances under which one or both of the parties may end the agreement. Termination may be for cause when one party does not do something called for in the contract, causing the other party to terminate (for example, the client fails to pay the bill). Usually termination requires written notice within a certain period of time (for example, 60 days).
termination for breach		When an agreement is terminated by either buyer or seller if the other does not comply with any of the terms, provided the one who is not complying is given written notice and reasonable time to comply.

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Glossary

Term	National Language Term	Definition
termination for cause		The legal grounds by which a contract may be terminated.
termination for convenience		The client may terminate the agreement on written notice to IBM following the expiration or termination of the client's obligations.
terms and conditions (Ts and Cs)		Terms: The essential statements on which the validity of the contract depends. Conditions: Defined events that must occur before contingent terms in a contract become fixed.
third party		Another business entity, not part of your own or the client/project sponsor's business.
time is of the essence		A statement in a proposal or contract that implies a seller must deliver a product and/or service in the shortest possible time.
time-and-materials		A type of contract in which the buyer reimburses the seller for labor expended and the cost of materials provided.
time-boxed		Constrained by target completion date, leaving flexibility on only the scope and resource dimensions.
title		The formal right of ownership.
to be objective		Without bias or preference. Being logical, detached, analytical.
to-complete performance index (TCPI)		A measure that provides ratio of the work remaining to the budget remaining. $(BAC - BCWP) / (BAC - ACWP)$
to be objective		Without bias or preference. Being logical, detached, analytical.
tort claim		A private or civil wrong or injury, including action for bad faith breach of contract, for which the court will provide a remedy in the form of an action for damages.
total float		Amount of time an activity can be delayed from its early start without delaying the project finish date.
traceability		The process of ensuring that a relationship can be established between two or more <u>configuration items</u> , especially those having a predecessor-successor relationship.
transaction document		For each business transaction done under IBM Customer Agreements there are appropriate number of "Transaction Documents" that confirm the specific details of the transaction. Examples of Transaction Documents include: addenda, exhibits, invoices, statements of work, invoices, and supplements.
transition		Passing from one activity to another smoothly.
Ts and Cs		terms and conditions
T&M		time and materials
UCC		Uniform Commercial Code
UCD		User Centered Design
UL		Underwriters Laboratory
uncommon sense		Unsound judgment.
unit price		A type of contract in which the buyer pays a fixed price for each unit of product purchased.
unwarranted		Not authorized or justified.
utilization factor		Amount of time a full-time equivalent (FTE) can be used for the length of the project.
VAC		variance at completion

Underscore = WWPMM Terminology

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Glossary

Term	National Language Term	Definition
validation		The process of examining a product to determine conformity with user needs. Validation is normally performed on the final product under defined operating conditions. (From ISO 8402) The process of evaluating a system or component during or at the end of the development process to determine whether it satisfies specified requirements. Contrasts with <i>verification</i> . (From IEEE Std.610.12) NOTE: Validation addresses a work product and answers the question, "Does it comply with requirements?"
variance		(1) In a statistical sense, variance is the standard deviation squared. (2) In a more common sense, and in WWPPMM, variance is any difference between planned and actual values. This can apply to cost, schedule, work products, deliverables, and so on.
variance analysis		Comparing actual project results to planned or expected results (PMBOK® 10.3.2.2).
variance at completion (VAC)		The difference between the budget at completion and the estimate at completion. BAC-EAC.
vendor		A supplier who provides standard ("off the shelf") products or services to a project.
verification		The process of examining the result of a given activity to determine conformity with the input requirement for that activity. (From ISO 8402) The process of evaluating a system or component to determine whether the products of a given development phase satisfy the conditions imposed at the start of that phase. Contrasts with <i>validation</i> . (From IEEE Std.610.12) NOTE: Verification addresses an activity and answers the question, "Does it process its inputs as expected?"
version		An instance of a configuration item or group of configuration items (such as work products or components) at a particular point in time.
walver		The voluntary relinquishment of a right, privilege, or advantage.
warranty		An assurance by the seller of property that the property is, or shall be, as it is represented or promised; an agreement that the seller will fix a defect. Warranty will be limited in time.
WAN		wide-area network
WBS		work breakdown structure
work breakdown structure (WBS)		A hierarchical decomposition of project activities, including dependencies, into lower level activities and tasks. Each descending level of this decomposition represents an increasingly finer view of the constituent parts. The WBS focuses on what must be done (i.e., activities) while the PBS focuses on what must be produced (i.e., work products). <i>This is a WWPPMM PM Work Product.</i>

Underscore = WWPPMM Terminology

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Glossary

Term	National Language Term	Definition
work item		The piece of work derived from the WBS and assigned to an individual, with which duration and effort are associated.
work package		A group of work items assigned to a single person or small group to be done over a short period of time.
work pattern		A set of logically related work units based on common experience and expertise that provides a proven way to develop one or more work products or deliverables. Both project management and technical work patterns exist, but WWPPMM defines only project management work patterns. Definition of technical work patterns is outside the scope of WWPPMM. (See also PM work pattern)
work plan management		The processes that are used to plan the work and cost of the project over time.
work plans		The subset of the project management plans that includes the work breakdown structure, product breakdown structure, organizational breakdown structure, project management schedule, operational schedule, and cost schedule and are used to guide both project execution and project control. (See also project management plans.)
work product		Any verifiable outcome that must be produced during the course of a project. There are two types of work products: - Technical work products, which are the items produced by the project, including hardware, software, services, financing, and so on. - Project management work products, which are the items related to the management of the project. A work product that is specified in an agreement is called a deliverable.
work product list		A list and summary description of the work products that are planned to be created and used by the project.
work unit		Portions of the work to be done that have certain common properties and, therefore, are appropriate to group and to assign to one sub-project or project organizational unit. Used in early definition stages to help organize and construct the work breakdown structure.
work time		Time during which work can actually be scheduled.
workaround		A temporary circumvention of a situation in order to allow work to progress.
working hypothesis		A tentative guide for further investigation.
works for hire		An agreement between two parties that one hired the other and that whatever the skilled labor produces is at the direction of the hiring party; therefore, ownership of all work products goes to the paying party.
WPM		Work Plan Management PM Domain
WSDDM		Worldwide Solution Design and Delivery Method

Underscore = WWPPMM Terminology

Current version can be found at <http://w3.atlanta.ibm.com/tops/classroom/projman.html>

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Glossary

Term	National Language Term	Definition
WWPMM		Worldwide Project Management Methodology

Underscore = WWPMM Terminology

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WEB SITES AND TOOLS

Business Process

CRM <http://w3.ibm.com/transform/crm> IBM Intranet

Customer Relationship Management (CRM) is the worldwide business management system used for full life cycle customer solution delivery. It covers relationships with customers, from planning market strategy to delivering customer solutions, and defines the business actions required to deliver value to our customers. This Web site contains a CRM on-line reference book and information on CRM process, tools, measurements, and on-line learning.

IPD <http://w3.ibm.com/transform/ipd> IBM Intranet

Integrated Product Development (IPD) is a business process that provides the framework in which specific offerings are selected, developed, manufactured, and taken to market. The two major components are Market Management and Product Development. This Web site contains information on IPD process, tools, education, templates, and checklists.

Tools

BMS <http://w3.ibm.com/services/bms> IBM Intranet

The Business Management System (BMS) supports engagement-based business and provides the following capabilities and functions: contract number assignment, contract registration and management, resource deployment and utilization, operational measurements, labor claiming and costing, posting of scheduled and nonscheduled charges, billing, and revenue recognition. It includes tools such as CLAIM and SCMgr. For access to Lotus-based BMS user documentation reference, go to http://w3.can.ibm.com/is/bms_doc.htm

BMWB <http://w3.ibm.com/transform/project/pmttoolsuite/bmw/b> IBM Intranet

Business Management WorkBench (BMWB) is a Notes-based set of tools that encompasses and facilitates the elements of IPD and its supporting processes. It allows access and analysis of information for project management and provides a variety of functions including Notes work flow and data management, a base project scheduling tool, project plan templates, deliverable templates, and standard RFA templates.

ICM <http://w3.ibm.com/transform/project/pmttoolsuite/icmintro.shtml> IBM Intranet

The Intellectual Capital Management Asset Web system provides Notes-based access to information, knowledge, software, experience, wisdom, and ideas that are structured to enable sharing for reuse and to deliver value to customers. It consists of more than 40 Competency Network databases plus others such as Project Profiles & Experiences, discussion forums, and so on, available for use by Global Services and Global Industries professionals.

GS RISK http://d02dbf51.southbury.ibm.com/q_dir/qai.nsf IBM Intranet

Located in the "tools" link, the GS RISK-Proposal Risk Tool is utilized during the SDD/MD Solution Design Phase and is required in QA reviews for proposals over certain clip levels. The latest version also provides recommended risk mitigation strategies to mitigate potential risks. The purpose of the tool is to (1) identify and assess the risks of a proposed services contract, (2) provide "best practices" containment suggestions for their avoidance or management, and (3) provide a risk management plan as input to an HQ review. The intended users are proposal team leaders and/or QA representatives for use during proposal development and when seeking valuable risks mitigation information. Additional tools to assess project, technical, and integration risks are also available from the Global Services Quality Assurance Database via the URL above, under the link "tools."

WSDDM <http://w3.ibm.com/transform/project/pmttoolsuite> IBM Intranet

Worldwide Solution Design and Delivery Method (WSDDM) is a collection of methods and tools for planning, managing, and delivering projects. It contains a groupware environment designed to help project teams plan projects, perform project work, and manage projects. The methods addressed are CRM Solution Design Methods, CRM Solution Delivery Methods, and Project Management Methods (PMM). Reference "Future Directions" in the header bar for an indication of convergence initiatives with respect to WSDDM, PM Toolkit, and the new PMM2 methodology.

Support and Organizations

AUDITS

Database Link D02DBL98

This is a Lotus Notes database that contains the audit programs used for Corporate internal audits. Each audit program contains sections outlining process definition, business objectives, planning, and control assessment questions. It provides a framework for audit readiness.

C&P http://d02db151.southbury.ibm.com/d_dirisis/globalcp.nsf

Contracts and Practices (C&P) is responsible for establishing worldwide standard business practices to manage the risk of the IBM company as a whole. C&P balances the need to close any one significant business opportunity with the requirement of IBM to establish transaction consistency, integrity, and profitability standards. This Web site contains C&P news and information.

COLT <http://wwphub2.pok.ibm.com/COLTPUB1/wwpcoltdc.nsf/> IBM Intranet

Procurement's Contract On Line Tool (COLT) contains numerous models for agreements, statements of work, clauses and other contract documents. It includes coverage for software, solutions, and services, and contains numerous courses and tutorials to assist project managers with procurement issues.

GI <http://w3.ibm.com/Industries/>

IBM Intranet

Global Industries (GI) Industry Solution Support is a Web site that provides access and links to information to assist in the definition, development, and delivery of solutions. It is especially useful to solution teams, solution support and delivery organizations, and development and research teams. It contains useful information on project management, risk management, and solutions requirements and development. The site has the Global Industries Solution Assessment Document and the Global Industries Risk Assessment Guide and Scorecard, as well as other valuable information.

GS <http://w3.ibm.com/services/>

IBM Intranet

Global Services (GS) provides this home Web site for access to professional services, product support, network services, news, and portfolio information.

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QA

<http://w3.ibm.com/services/qa>

IBM Intranet

The Global Services Worldwide Quality Assurance Database is the repository for CRM QA information worldwide. It is used by Quality Assurance Representatives and also has a significant amount of information, processes, and tools for use by project managers who are responsible for quality delivery of solutions worldwide and who must avoid the pitfalls that lead to "troubled projects." The database contains QA WW strategy, general information, "Troubled Projects Root Causes" White Paper, forms, reports, tools, and checklists, and the WW QA Process for SDD/MD.

Project Management Initiatives

GS WW PMI

<http://w3.ibm.com/transform/project/gs>

IBM Intranet

The GS Worldwide Project Management Initiatives Web site builds on the information contained in the PM/COE Web site to provide all the information you need about Project Management initiatives in IBM Global Services. The site contains information about the profession aspects of PM, including education, certification, mentoring, and giveback. The site also provides current information about the methods and tools Global Services is rolling out to assist its project professionals. Finally, this Web site will provide insight into the financial and PM maturity measurement systems Global Services is deploying to enhance the business management aspects of project management.

PM/COE

<http://w3.ibm.com/transform/project>

IBM Intranet

IBM's Project Management Center of Excellence (PM/COE) was established to ensure that IBM's commitment to becoming a project-based business is achieved. This Web site contains news items from the PM/COE as well as information on education, certification, mentoring, and tools.

PMI®

<http://www.pmi.org>

Internet

Project Management Institute (PMI®) is a worldwide nonprofit professional organization for project management professionalism.

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